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THE

PHOTOGRAPHIC NEWS:

A WEEKLY RECORD

OF THE

PROGRESS OF PHOTOGRAPHY.

VOLUME XIII.

EDITED BY G. WHARTON SIMPSON, M.A., F.S.A

Nulla recordanti lux est ingrata.—Martial.

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THE [illegible] CENTER

PREFACE.

But few after words from us are required to stand as Preface to the Volume of the Photographic News just completed. In presenting the details of so many experiences, the expression of the conviction of so many minds, the utterances of so many voices, as are contained in the twelve hundred and seventy columns of which our year's Volume consists, we have, we believe, embodied a record of photographic transition and progress throughout the world, in which little of any importance to photographers, little connected with any phase of their art, has been left unchronicled. The research of experimentalists in those branches of mathematical, physical, and chemical science which bear upon photography ; the experiences of practical workers ; the difficulties of the student, and the solution of those difficulties ; the suggestions of art students and art teachers, and the record of the efforts and achievements of both ; the consideration of the social and commercial ethics of photography as a profession ; the statement and discussion, in short, of every question which bears upon the interests of photography as an art or science, and an industry, to be found in the completed year's issue of a properly conducted photographic journal, rank, we believe, amongst the most essentially operative of those agencies which have elevated photography in its present high position, and placed it, after an existence of little more than a quarter of a century, in point of practical efficiency, on a level with many of the arts which have existed for centuries. We place on record here our conviction of the importance of photographic journalism in no spirit of vain-glory, but simply to indicate the conviction with which we undertake and endeavour to discharge our duty. If we come short of effecting our aim, our failure is the more deplorable in proportion to our high estimate of the possibilities open to us ; if we achieve our end, the success is great, and our satisfaction is complete. Our readers constitute the tribunal ; the evidence, in the form of our Thirteenth completed Volume, which has been growing under their attention for twelve months, is before them ; and their verdict only remains to be given.

We are spared, however, the anxiety usually attendant upon suspense : in one sense we have not to wait for a verdict, and we should be ungrateful if we implied that our metaphor could be fairly carried out. The abounding evidences which continually reach us, not only in the commercial success of our enterprise, but in the constant aid and personal sympathy of an extensive constituency, give us the undoubted assurance that our aim is appreciated, and is regarded as, in some degree, at least, satisfactorily attained. The greater part of the success, which we here gratefully acknowledge, is due to the active co-operation, the ready and valuable communication, of a large body of contributors and correspondents, professional and volunteer, in all parts of the world, to whom we now tender cordial thanks and ample acknowledgments.

The recognition of a satisfactory mead of success in the past is generally associated with pledges to deserve a similar reward in the future ; and in offering such pledges, we should belie our belief in the success, if we proceeded to the announcement of any changed programme. We have no such change to propose : wherein we have done well, we shall endeavour to continue in well-doing. To give the earliest, completest, and most trustworthy possible details of every improvement and discovery connected with the art, of interest to its devotees ; to qualify or confirm, where necessary, the claims made in the various announcements of novelties ; to be, as often as possible, the pioneer and adjutor of improvements ; to present, where it is desirable and possible, examples of such improvements ; to search out and preserve a constant record of the minor changes and modifications in the practice of the art, upon which much of real advancement depends ; to give the most earnest attention to the difficulties of students ; to devote, in short, the whole of our time and the experience gained during a twenty years' study of the art to the advancement of the interests of photographers generally, and of our readers specially—this is what we have done in the past ; this, without multiplying pledges, is what we intend in the future. Where new elements of efficiency can be secured, whilst all existing features of value can be retained, we shall not fail in effort, and our readers shall not lack, we hope, in results.

To the many thousands of readers, correspondents, and contributors, many of whom we shall never see, but with whom we have often pleasant communication, we offer our cordial greetings, and wish them a very happy and prosperous New Year.

JANUARY 1st, 1870.

THE PHOTOGRAPHIC NEWS.

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PHOTOGRAPHY DURING THE PAST YEAR.

In glancing, at the close of each year, at the progress made during its flight, the mental vision naturally endeavours to find repose on some special landmarks which definitively indicate the steps of advance which have been secured. The domain of photography during the past year presents few such landmarks: the tide of improvement has flowed steadily on, but its results have been gradual and general, no startling novelty or great discovery in the art finding a place in the year's records. It has, nevertheless, been an active year, and, despite some degree of commercial depression in connection with photography, a spirit of inquiry and of general interest in the art itself has prevailed amongst all associated with it.

One of the great guarantees of the continued progress of photography is found in the readiness of the mass of photographers to re-examine, when fairly challenged at any time, the bases of their operations. Without abandoning processes by which they secure success, the mass of professional or amateur photographers will at once give attention, and, if necessary, experiment, to new principles and new modes of working. A notable illustration has occurred during the year in the attention devoted to Mr. McLachlan's announcement. By this gentleman the wet collodion process as generally practised was arraigned and placed on its trial. Its uncertainties, its defects, its unphilosophical character, were affirmed with energetic iteration. Notwithstanding that the mass of skilled practical photographers habitually obtained fine negatives by the process, the possibility of obtaining still higher results, with more absolute certainty, was a proposition which excited general and expectant attention. The subsequent announcement of the method of working by which greater certainty and higher excellence were to be attained scarcely realized the anticipations which had been excited; but renewed attention was called to some points before known, but worthy of more attention and consideration. The value of sunning a bath very thoroughly was strikingly illustrated by Mr. McLachlan's experiments, and by the discussion of the question a more perfect light was thrown on the nature of the action produced. Mr. Rejlander's subsequent proposition to keep the nitrate bath continually exposed to, instead of shielded from, daylight, has been in several cases carried into beneficial effect.

One of the most important facilities yet proposed for rectifying a disordered nitrate bath has been introduced by Mr. J. R. Johnson during the year. A couple of years ago Mr. Crookes, in these pages, suggested the use of permanganate of silver for purifying water to be used for silver baths. Mr. Johnson proposed oxidizing—and so eliminating the organic impurities which had accumulated in a nitrate bath from use, or had been introduced into it from the use of impure water—by means of a solution of permanganate of potash or permanganic acid; and the remedy, when judiciously applied, has been found most efficient.

Modes of developing have not undergone much variation. The rage for organic additions to the iron solution has subsided, leaving photographers, however, with some additional power in this direction. The use of gelatine, sugar, &c., has been found of great value in some cases where clean shadows and vigorous lights were important, and difficult to secure. The organic additions in such cases have been found invaluable. In the majority of cases—where the nature of the subject and the character of the lighting permit—the plain iron solution with a little acid is most commonly used. For intensifying purposes, where intensifying is rsequired, the organic iron solution are found useful, and are largely employed. An important addition to our knowledge in regard to development was made by Mr. Robinson in the observation that intensity might be increased by keeping the plate in motion during development; whilst softness and detail may be obtained by keeping the plate still after the developer has been poured upon it.

Dry processes have not made great progress during the year. The use of iron development with Mr. Gordon's gum process has been found of great value; the process itself has been more extensively used, and generally with much success. M. de Constant, an indefatigable and highly trustworthy experimentalist, has formed a high estimate of its value, and the results he has produced by it are exceedingly fine. The same gentleman has worked the coffee process with much success. Some examples we have seen of a new process, not yet described, give promise of a dry process of rare sensitiveness and yielding very fine results. The collodio-bromide process and its modifications have received much attention during the year, and the reports generally upon its results, especially with the Liverpool dry plates, have been generally very favourable. Moist preservative processes have received some attention during the year, the claims of honey having been revived. The advantages of the moist morphine process have also received additional testimony.

Printing processes have received considerable attention. Silver printing, despite the varied improvements made in carbon operations, still seems destined to play an important part in photographic operations for many years to come. Albuminized paper printing has reached a very high standard of excellence. Plain paper printing has for some years almost entirely ceased to be practised, but there are not wanting indications of some degree of reaction in its favour. For many purposes such a movement would be desirable. We shall have more to say on the subject, but not now, as it belongs more properly to the future than the past.

The subject of toning and fixing silver prints at one operation has been revived and received some attention, but no general desire to return to old methods has been manifested. Means of more perfect fixation, especially in relation to the elimination of silver from the whites of albuminized prints, have been discussed. The value of the addition of carbonate of soda to the fixing bath has been confirmed, and an attempt to introduce hyposulphite of ammonia as a fixing salt has been made. Its value remains yet to be accurately determined.

The introduction into commerce of sensitive prepared papers—such as the Obernetter paper, by our collodio-chloride process; and the Carrier paper, by an albuminized process—has made some progress during the year, but has not yet become common.

Carbon printing has continued to excite attention, and modes of simplifying the operations have been sought by Mr. Blair, Dr. Vogel, and others, with a fair degree of success. The application of Swan's process to the purposes of art reproduction has been already extensively and successfully carried out by the Autotype Company, M. Braun, and others, and promises to exercise a most important influence on the progress of art education. Photo-mechanical printing processes have not made much progress during the year, Mr. Fruwirth's photo-block printing or phototype process being the chief substantial and practical addition to the modes already in use. Various new processes for photo-mechanical printing with half-tone have been attempted, but none as yet appear to have come into practical use.

The production of photographic enamels has received considerable attention during the year, and will probably receive still more attention. Already, considerable progress has been made in this country, the results obtained by Mr. Henderson possessing a very high degree of merit.

Enlarging processes have not progressed much during the year. Increased attention has been given to development printing for such purposes; and enlargement by camera printing on collodion has been more practised. The Eburneum process has excited much attention during the year, and become more generally practised.

A marked advance in the artistic character of photographic portraiture has been manifested during the year, and especially illustrated at a recent exhibition of the Photographic Society. The influence of the works of M. Adam-Salomon was very beneficially apparent. The introduction of natural backgrounds into portraits has received much attention, and has in many cases been effected with much skill and taste. Our pages during the year have contained many valuable suggestions for producing this effect, both by ingenious methods of double-printing, and by the production of double negatives.

Modes of lighting and the construction of glass houses have been less discussed than usual. Some very important researches intimately connected with the latter point have received attention, and Mr. Gaffield's observations on the changes produced on glass by the action of sunlight will probably prove of great value to the photographer in his future selection of glass.

Inquiry, research, and invention have been active in a variety of matters of minor interest in photography. India-rubber mounting has continued to excite some attention, but is generally condemned as unsatisfactory. The presence of hyposulphite in mounting cards, and modes of detecting it, have received attention. Transferring negatives, the manufacture of leather collodion, the preparation and use of encaustic paste, the use of the magnesium light for enlarging, an improved form of stereoscope, and several other novelties of interest in connection with the advancement of the art, have been brought under the attention of photographers, and more or less actively discussed.

The question of forming a Relief Fund for photographers has been canvassed considerably during the year, and a warm interest in it expressed by many. Two difficulties only seem to stand in the way of its establishment, and neither of these involves any probable lack of funds amongst photographers, or want of disposition to contribute them to such a purpose. The difficulties consist, first, in the absence of a definite and satisfactory programme, and the consequent uncertainty as to how funds would be applied; and, second, in the want of a committee of trustworthy men to undertake the management of the matter. Both these difficulties will shortly, we hope, be removed. A large-hearted amateur, a little more than two months since, offered to contribute fifty pounds to such a fund, if a suitable committee were formed within six months. Since then another generous promise has reached us, offering twenty-five pounds more on the same conditions. Numerous promises of smaller sums, both for donation and subscription, have been forwarded to us. We shall be glad to continue to receive, not money, but intimations of willingness to contribute in case a satisfactory committee be formed. The extent of the promises of this kind forwarded to us will materially affect the question of forming a committee. If a goodly amount of money be promised, we think a committee of good men can be formed to administer it.

The social status of photography and photographers has been further discussed during the year, and in connection therewith has arisen the question of prices, quality, and competition. In the main we believe the conviction is gaining ground that low prices and unfair competition constitute a suicidal as well as a fratricidal policy, by which no one—neither the public nor the profession—is benefited. As competition in prices generally tends to the production of hastily, carelessly, and imperfectly conducted work, the public is injured; as such competition acts and reacts throughout the profession, injuring alike purse, health, and reputation, the photographer is injured, and sometimes ruined; and as bad and unstable work is charged to the art generally, and not to the infatuated or incapable producer, photography is injured, and an evil reputation fixed on it which will not be readily removed. Photographers generally begin to see this, and we believe that higher aims will prevail.

Death has robbed the art of some whose names have been distinguished in connection with its practice. Mr. Thurston Thompson, of South Kensington Museum, died early in the year; Mr. Ponting, of Bristol, followed; and, since, Mr. Barber, of Islington. Many others, too, less known to photographers generally, have been removed from the ranks.

The present number of our journal reaches the reader in time to permit us to offer to each and all of them—contributors, correspondents, and readers—our heartiest expressions of good-will, and our wish that each may enjoy a prosperous and happy new year.

PAPER SENSITIZED WITH CARBONATE OF SILVER.

MM. Schaeffner and Mohr have recently brought under the attention of the French Society a new description of sensitive albuminized paper, which appears to possess considerable interest and promise of value. In the *Moniteur*, speaking of the matter, they say: "The importance of this paper will be sufficiently appreciated when we remember the many inconveniences attending the ordinary method of printing. The principal drawback to our present process is the very short time which the prepared paper will keep in a serviceable condition; a change of weather, especially during the short winter days, often entailing upon the photographer considerable loss. For a considerable period experiments have been made for the purpose of endowing sensitive albuminized paper with better keeping qualities; and if, at the present moment, none of the different methods proposed are in use, it is simply by reason of their being incapable of furnishing the desired results.

"By the introduction of the paper we here propose, a real progress will, we believe, be made, for the results furnished, as regards variety of tone, are equal to those of the ordinary process, while the prints produced are certainly superior in respect to the great purity of the whites and extreme delicacy of the image. Our paper is sensitized by means of carbonate of silver. The manner of manipulating it is absolutely the same as that pursued with the ordinary kind of paper, with one additional operation only, which consists of submitting the pads of the pressure-frames to the action of ammoniacal vapour. This vapour fulfils the duty of a reducing agent, and it is the sufficiency of the vapour which is the principal condition of success. It is for this reason that we have chosen the pad of the pressure-frame for impregnation with ammonia, as, by reason of its thickness, it is capable of absorbing a sufficiently large quantity of the gaseous fumes.

"The operation of fumigating is conducted by means of a box, fitted at the top with a lid, and at the bottom with a drawer in which a mixture of carbonate of potash and slacked lime is placed; in the interior a division is effected by means of wire network, through which the ammonia vapour freely ascends into the upper portion of the box. The pads are placed inside without any special precaution, excepting that of seeing that they are not packed too closely; when they smell strongly of ammonia they are withdrawn and placed in the frames, when it will be found that the printing progresses very quickly—three or four times as rapidly, in fact, as with ordinary albuminized paper. A failure is only then possible when there is an insufficiency of ammonia vapour.

"For toning our sensitized paper we particularly recommend sulphocyanide of ammonium, employed according to the following formula:—

Sulphocyanide of ammonium...	80	grammes
Acetate of soda	20	„
Chloride of sodium	10	„
Chloride of gold	¼	gramme
Water	1000	

We have obtained, nevertheless, very fine results with other toning solutions, as, for instance, the acetate of soda toning bath, &c. We fix the prints in a 15 per cent. solution of hyposulphite of soda.

"By moderating the cost of the material we hope to render it available for employment by everybody."

THE ART CLAIMS OF PHOTOGRAPHY.

A few weeks ago we reproduced, with a brief comment, a notice of the Conduit Street Exhibition which appeared in the *Gentleman's Magazine.* The notice, although discriminating and appreciative on the whole, contained one or two statements—and at least one fallacy—which photographers who appreciate their art were not likely to endorse. The new number of the *Gentleman's Magazine*, with an early copy of which we have been favoured, contains a long letter from a gentleman well-known in photographic circles, and a rejoinder, both of which will interest many of our readers. We reproduce them below.

Mr. Urban,—I have just read in your last month's "Incidents" a notice of the opening meeting of the London Photographic Society. The criticism indulged in by the writer of that notice is so very much in that old, old style, in which, ever since its first introduction, photography has been abused by the ignorant, mocked at by "artists," and laughed at by those "critics" who, in their desire to impart information which they do not possess, only too often lay themselves open to the ridicule of better instructed men, that I take up my pen, with the idea of sending you a few lines to controvert some of the erroneous doctrines your critic has put forward, and to point out as concisely as I am able some of the true art claims of photography: to do so fully would demand an essay. The difficulty which has been felt in admitting photography to any art position has certainly not arisen from any want of perfection in the means employed, but rather from the fact that hitherto art has been a subject about which the majority of photographers have but too little concerned themselves. The assertion made by your critic—and which I, as well as many others who have devoted much time and study to the subject, considered as quite a fallacy of the past—that as a photographer's camera has no soul, therefore his pictures can have none, is emphatically contradicted by your critic's own observations as to the superiority of M. Adam-Salomon. Granted that a photographer's camera has no soul, does it follow that therefore the photographer has none? Because a sculptor's chisel has no soul, is it to be asserted that his works cannot bear the impress of the soul? Who would ever think of propounding such an absurdity? The chisel can do nothing of itself; no more can a camera: the mind must direct the use of either. But then, it may be argued, the mind may direct, but in the two cases its direction will be of a different character; in the one the mind will have an immediate influence over every touch and over every stroke, while in the other in will merely have, as it were, a passing influence, only extending to general selection of subjects, and not descending into the minute details of actual accomplishment. These are, it is said, the work of mere mechanism, quite independent of the brain of the photographer. This assertion, though it may find a place among many useless and unsubstantial theories, has no foundation whatever in actual fact. If the work of taking a photograph, apart from the selection of the subject, were a merely mechanical act, a *mere mechanic* could do the work. I have been myself a mechanical engineer, and am well acquainted with what mechanical skill really is, and I have no hesitation in saying that our English mechanics are quite competent to perform any purely mechanical operation with the most absolute accuracy; and yet, with all their skill, they could not take a photograph which could at all approach the work of any first-rate photographer—let us say the example taken by your critic, M. Adam-Salomon. The productions of this gentleman excel, not only in the greater skill with which backgrounds and accessories are arranged in them—not only upon general skill, in fact—but, as your critic very pertinently remarks, "in the use of the brain in every part of the process." Neither camera nor lens can claim the honour of producing the works of such a man: it is owing to the impress of a superior mind that they excel the works of lesser men. I have the pleasure of knowing M. Adam-Salomon personally: I have seen him work, and have assisted him in his operations, and, from an intimate knowledge of all that appertains to photographic manipulation, I can state with assurance that in his hands the same sitter, using the same camera, chemicals, lens, &c. (in fact, the same mechanical conditions), ay, with the same pose even, and the same management of light and shade, a result will be produced which is quite different from that which any other photographer would produce. His result would be, in fact characteristic of him; and the same picture produced by any other man would equally contain points characteristic of its author.

I should have liked to have given many instances of men whose pictures are at once to be recognised by their individuality, and of pictures in which it has been granted by all impartial critics, that, great as may have been the difficulties with which the photographer has been beset, his triumph over those difficulties has been complete; and of which it might be said, without flattery and without exaggeration, that they were triumphs of mind over matter. As, however, your critic has contented himself with a somewhat general treatment of the subject, placing M. Salomon alone in a position of superior excellence, I prefer to adopt the same course; and though I, in common with many others, very much doubt the real superiority of this celebrated Frenchman to many of our best English artists, still, for the sake of present argument, I will readily accept the position of his superior excellence. This, then, being allowed, and it having, I trust, been shown that, as your critic himself admits, this gentleman's work is superior because it shows "the exercise of a master mind," the objection to ideal pictures which is urged at once falls to the ground. If a "mere portrait" can and does bear the impress of the mind of the man who took it, then there can be no reason whatever why those pictures which "must bear the impress of a soul" should not be, not only attempted, but successfully achieved. With the actual fact of all such pictures at the late Exhibition being failures, I have but little to do; there were few art photographs exhibited, and those possibly, with perhaps an exception or two, did not show the powers of photography to its best advantage. It is against the wholesale condemnation of all attempts at anything more than mere mechanical drudgery being made by photographers that I now write; and it is against the misleading influence of writers who, like your critic, give their opinions too freely upon subjects with which they are clearly not at all conversant, that I will ever bend the whole weight of my influence, not only in print, but also in every other way in which it falls within my province to do so.

One very important mis-statement, and one very important omission, in your critic's remarks shows me plainly that I am not wrong in accusing that gentleman of ignorance of the subject on which he has written.

His statement that the landscape photography of the late Exhibition showed no higher merit than was shown by pictures taken a dozen years ago is simply nonsense: while to assert that landscape photography, as a branch of the art, "has remained at a standstill," is not only absurd, but it is simply untrue. It is in landscape more especially that almost all the improvement in photography has been made during the last ten years. Only four years ago, in the answer to correspondents in one of the papers devoted entirely to photography, a statement was made that no lens then existed by which pictures of more than 70° angles could be made; now there is no limit to the angle of view which can be obtained. Then, too, in the actual process of landscape work there have been great improvements during the last few years, so much so that to detail them would be tedious.

The omission which your critic makes is also one of a very serious character. In his high praise of M. Salomon and his pictures, there is one most important feature of his works which has not received any notice: the "re-touching" upon the finished print by an experienced artist, on which, in very many cases, much of the beauty of his pictures depends. In some cases the whole of the face is so completely "touched up" that very little, if any, of the original photograph remains visible. This, though by no means always the case, is still so important a feature in the works of M. Salomon that it should never be lost sight of in any critical notice of his productions, as it is often not a little conducive to art excellence in photographic portraiture to be able to look upon the face as technically of but small importance at the moment of taking the picture, while the whole attention is being given to backgrounds, drapery, and so on, leaving the face, which is in reality of most importance, to the attention of the colourist or "re-toucher." This is by no means the usual plan with M. Salomon; but when retouching is a method extensively practised, it should, as I say, be always taken into consideration in a critical notice, especially when it is one of the causes out of many which conduce to a marked success.—I am, yours truly,

A Photographer.

[We have laid this communication before the writer of the note to which it refers, and he remarks upon it as follows.—S. U.] :—

The angry tone adopted by "A Photographer" suggests the notion that he is driven to follow the well-known legal precept for giving apparent strength to a weak case. He abuses me for my ignorance upon photographic matters. For my own part I care little for this; but it is due to your readers that they should be informed that they are not addressed by the ignoramus which "Photographer," to suit his purposes, supposes me to be. Permit me, then, to inform them, that I speak on photographic subjects with fifteen years' experience as a basis for my opinions, and that I can claim acquaintance, in most cases from actual practice, with every known process and every description of apparatus. Every phase of photographic development which the period embraces is perfectly familiar to me. As a chronicler of scientific matters it has been my duty to note carefully the applications and the modifications of the photographers' art, and, as an occasional reviewer of photographic works, I am tolerably conversant with its literature. You, Mr. Urban, may have seen a specimen or two of my production, and you may be in a position to judge how far my friends are justified in preferring portraits of my amateur taking to those produced by many of the professed masters of the art. This is egotism; but the circumstances justify it.

When I have asserted my claim to as great competency for judgment as any ordinary critic can be expected to possess, I have said wellnigh all I care to say in reply to your ill-tempered correspondent. Much of what he says is matter of opinion only. On some points he is very short-sighted, or else very biassed. He fancies I have contradicted myself by declaring M. Salomon's pictures to show the exercise of a mind, and by denying the possibility of a camera-picture bearing the impress of a soul. I see a great gulf between the works of M. Salomon and those of an ideal picture maker. One simply portrays, the other tries to create. "Photographer" seems to think that the gulf may be bridged over; I hold such a thought a delusion. The best evidence of the impracticability of producing art photographs is, that of all the attempts that have been made in that direction, no one has exhibited the germ of success. Can any of the works of Lake Price, Rejlander, Cameron, or Robinson, be called suggestive? Are any of them aught else than *portraits*, or combinations of portraits, or patchworks of portraits and scenes? In my opinion, not. Once I essayed a fancy picture. My model was a lady of artistic taste, and all accessories were carefully studied. But all was in vain; the best result was only the diminished reflection of a lady in costume, with a stagey expression, suggestive of nothing but an attempt to look a character. How different the result if I had asked my friend Scumbler to sketch the figure standing before my camera, and to put a dash of his soul into it! But my failure pleased some people, for I sold the negative to a London publisher, and shortly after encountered its prints in the shop windows. I never tried again, however. The light-beams were not to be handled like the painter's brush or the sculptor's chisel; I could but copy, and copying models did not realise my idea of creating pictures.

With regard to what "Photographer" calls my mis-statement concerning landscape photography, I can only say that I see no reason to modify my opinion, nonsense or no nonsense. Nothing in the exhibition surpassed, to my remembrance, the works which the Lo Grays, the Bissons, the Everards, and the Fentons exhibited years ago. As to panoramic photography, it is an improvement not yet consummated, notwithstanding its age, far greater than "Photographer," with his presumptive experience, seems to be aware of; for Sutton in England, and Porro in France, made panoramic lenses, and took pictures with them, eight or nine years ago.

And as to M. Salomon's retouching, it did not concern my notice. I wrote for the public, who neither know nor care about means, but who look only at ends. If I had criticised in detail every picture or every exhibitor, you could not have given space to my remarks. Such a review might have suited a photographic journal; but even there I should have omitted reference to the Frenchman's retouching, for it has been discussed *ad nauseam*.

As the art-critic here remarks, much of the matter here discussed is matter of opinion, and, like the gold and silver shield, presents two sides, each equally important in an estimate of the whole truth. The main fallacy into which the critic fell was in the assumption that, because the photographic camera has no soul, the photographer's work must necessarily lack the impress of a soul. He mistook the tool for the workman. As we before pointed out, his own observations on the work of Adam-Salomon showed that he did not believe in the fallacy to which he gave utterance. He now, however, takes higher ground: he makes a distinction between the photographer and the ideal picture-maker. "One simply portrays, the other tries to create." This is a distinction which the most staunch upholder of the art-claims of photography will readily admit, but in nowise disposes of the art-claims of photography. All art in painting is not creative art: much very excellent work is imitative art, but not the less fine art. The imitative artist in painting will give the impress of his mind to his work in his mode or manner of treatment; and in like manner, if not in like degree, will the photographer impress his mind.

The critic asks if the works of the best pictorial photographers can "be called suggestive." To which we reply, that many of Rejlander's and Robinson's best works are eminently suggestive. Take Robinson's first work of the kind, for instance, "Fading Away:" we boldly challenge the verdict of Sylvanus Urban on the suggestiveness of this picture. But, putting this aside, we deny that suggestiveness is the touchstone of art. That it is a high quality in art cannot be doubted; but we cannot admit that it is the sole touchstone of art qualities. Besides, it is too vague. Suggestiveness requires a condition and capacity of mind in the observer, as well as certain qualities in the work of art itself. Peter Bell might have objected that a primrose was not suggestive, because

> "A primrose on the river's brim,
> A yellow primrose was to him,
> And it was nothing more;"

whilst to Wordsworth that primrose, or even the meanest flower that blows, suggested thoughts which "lie too deep for tears."

Another dangerous but common form of fallacy is that involved in the statement that the critic once essayed a fancy photographic picture, and failed, and the argument deduced that, because his own first attempt failed, or failed to satisfy himself, the thing was impossible. That it should have done so was not unnatural, nor is the circumstance uncommon. In all art, realization—especially with beginners—often lags far behind conception; and surely no legitimate argument against the art-claims of photography should be deduced because the first attempt of one gentleman to use it as a fine art fell short of perfect success.

Photographers who strive with a loving earnestness to elevate their art naturally object to the *haut en bas* tone in which art critics are apt to indulge in dealing with sun-pictures; because the photographer has more difficulties to deal with in his pictorial aims, it is a little hard that his best results should be summarily dismissed from the category of fine art, and that successes or failures should be treated alike, not as the produce of his brains, but as the work of his camera.

Foreign Miscellanea.

A general treatise of photography has just been published by Dr. Borlinetto, of Padua; the work is printed in the Italian language, and occupies a thick octavo volume.

The distribution of awards has been made at the Havre exhibition. Among the fifty photographers who exhibited, eight gold and six silver medals were distributed, besides thirteen honourable mentions.

Among other papers which have been forwarded to the French Academy of Sciences to compete for the Montyon prize of 1869, given for the encouragement of medicine and surgery, are a collection of photographic studies of the nervous system of man and several of the superior animals, taken from sections of congealed nervous tissue.

At the bi-annual public meeting of the Statistical Society of Marseilles, M. Leon Vidal, the talented Secretary of the Marseilles Photographic Society, read an interesting paper on the Progress of Photography, illustrating his remarks with specimens of the Swan and Woodbury process, and of the methods of MM. Baldus, Lafon de Camarsac, Niepce de St. Victor, Placet, Lemercier, &c.

In the *Photographische Correspondenz*, M. Adolph v. Gotz publishes a paper on retouching photographs. His method of preparing the albuminized surface to receive the pigment is to rub it over with a tuft of cotton wool dipped in clean glycerine; the print is thoroughly coated with this material, and then a second and a third tuft of dry wool is rubbed over the surface until the latter is free from greasiness when touched by the finger. The albumen, when moistened in this manner, readily receives pigments which would be at once repelled by a dry, horny surface.

At a meeting of the Vienna Photographic Society, held on the 3rd ult., it was stated that M. Schroder, of Hamburg, is at present occupied in constructing a telescope to be fitted with clock work, for photographing the heavenly bodies; the instrument is so arranged that the object to be reproduced will be considerably enlarged before it is thrown upon the sensitized plate.

At the same meeting some discussion took place relative to the qualities of the Harnecker collodion, which had been experimented with by several members, both in the wet and dry processes; the general verdict pronounced was somewhat unfavourable.

In the *Correspondenz*, M. Wendling makes a statement to the effect that the reason of the discolouration of sensitized albuminized paper is similar to that which produces fogginess in a negative in hot weather: in both cases a reduction of a silver compound takes place, which is insoluble either in cyanide of potassium or hyposulphite of soda. M. Wendling also recommends the following method of intensifying a varnished negative which may be considered to be too transparent. Take a mixture of equal parts of alcohol, sal-ammoniac, and water, and pour it several times over the plate; then treat the latter with a solution of corrosive sublimate; and, finally, apply another coating of varnish.

The Hamburg Photographic Exhibition was opened with great *éclat* on the 14th ult. The principal officials of the town, as also many strangers of note, were present at a *conversazione* which inaugurated the commencement of the exhibition. In the course of the evening, Dr. Stinde delivered an address in the presence of a numerous body of visitors. It is contemplated to present every member of the Photographic Society with a photograph in enamel, of cabinet size, burnt into the centre of a porcelain plate.

A manual of "Microscopic Photography," by MM. Oscar Reichard and Carl Sturenburg, has just been published at Leipsic. The size of the plates used by these gentlemen was three inches square; instead of a ground glass for focussing, which would present too rough and coarse a surface, a collodion plate sensitized in the ordinary manner, and treated with a solution of iodide of potassium, was used for the purpose. The question as to whether sunlight or diffused light is the more suitable for operating is fully discussed, the authors inclining to the preference of diffused light. Sunlight is apt to produce coloured beams of light around the lines of the picture, which have the effect of rendering the image confused and undefined. Objects in glycerine yield by far the best pictures, and none should be used for photographic purposes which are not of first-rate order. Besides the ordinary wet collodion process, with iron developer and mercury intensifier, the authors recommend the employment of collodio-albumen plates, which yield exceedingly fine negatives, from the fact of the pores of the collodion being filled with the subsequent coating of albumen. A sensitized collodion plate is washed, coated with iodized albumen, washed again, and covered with a 10 per cent. solution of silver; it is afterwards developed with a compound made up according to the following formula:—

Pyrogallic acid	1 part
Water	90 parts
Formic acid	30 ,,

M. Isidor Dubost, in the *Archiv*, states that the only reliable way of obtaining clean, sensitive coffee plates, free from stains, is to add small quantities of acetic acid to the first three water baths in which the plates are washed after their preparation; when they have been well drained they are placed in a drying-box, furnished with a saucer of strong sulphuric acid to absorb moisture.

In the same journal appears a formula of M. C. Sternberg, for preparing a developer especially suitable for the treatment of negatives bearing reproductions of paintings: it is as under:—

Water...	200 grammes
Sulphate of iron	8 ,,
Nitrate of lime	1 gramme
Glacial acetic acid	6 grammes
Spirits of wine	12 ,,

SILVER PRINTING—ADVANTAGE OF THIN FILMS.

BY WILLIAM BLAIR.

The favourable notice of my simplified carbon prints which lately appeared in the Photographic News encourages me to farther perseverance, particularly with the non-transfer process, as I am now satisfied that it may be useful for a large class of subjects, and think it may be still farther improved. No doubt, with the assistance of others, it might be brought to greater perfection in shorter time. Still, there is a variety of modifications of which the process is susceptible which I have not yet been able to overtake by actual experiment, and which I have a wish to try before calling in foreign aid. Of course, as other heads and hands are busy, I may be forestalled by delay, but I shall not regret this much, if it is not carried to the Patent Office, and my own hands as well as others tied-up from working it.

Meantime, it appears to me that there is a strong tendency in many quarters to cling to silver printing, and the well-known certainty and beauty of the results form a strong temptation to do so. Perhaps, then, instead of endeavouring to discourage silver printing altogether, it might be better that a renewed effort were made to place it on a firmer basis. This, no doubt, is being attempted in some quarters, and, from the ability and experience of the parties engaged in it, may be successful to a considerable extent. That many silver prints have, under favourable circumstances, lasted a goodly number of years, appears to be undoubted; and if we could insure their preservation in a good condition for even half a century, they would frequently serve their purpose, and might be reckoned of no small value.

I shall not attempt to deal with the *vexata questio* as to the various chemical changes that the impressionable paper has to undergo in the various stages of salting, sensitizing, toning, and fixing, or to tell what must be the effect of acids or alkalis at the different stages. These are in course of investigation by abler chemists, and the best of them, as far as I can see, are only groping their way. But I will come at present to what has been considered one grand cause of early deterioration, viz., the difficulty of removing the hyposulphite of soda from the paper.

To effect this important desideratum of expunging from the paper all traces of the fixing agent, every sort of washing machine has been tried that ingenuity can devise. The papers have been *swirled* for hours in water hot and cold; pressed and swirled again, till one might suppose that their very substance was crushed out of them; counteractive chemicals have been used to convert or pervert the hyposulphite into another material altogether. And yet we have not heard, on reliable authority, that security has been attained. By all means let such experiments be tried, and let the experimental prints be dated and kept for the guidance of posterity, if they will go down so far. But are we at present, for general work, to adopt any of these new plans on the mere probability or possibility of success, and wait another twenty years for the result? Better, surely, to adopt some modification of known processes that will insure a good measure of success at present, although this may, perhaps, be attended with a little extra trouble.

The plan that I would recommend, as it seems so difficult to get the hypo out of the paper, is, not to put it into it. Take the picture upon glass, and afterwards transfer it; or, if paper is used at all in the first instance, let it be as *thin* as possible. It is the thick body and spongy nature of the paper used that create the difficulty: the thicker the paper, the more the difficulty is increased. I never got finer silver prints in my life than some which I once tried on very thin tracing-paper; and these, I believe, would be more thoroughly washed by pinning them on a board, and pouring a few panfuls of water on them (it could be done through the rose of a watering-pan), first on one side and then on the other, than thick paper would be by sweltering a whole day in a washing-machine; for it must be remembered that the currents do not reach the heart of the paper; amid external agitation all is quietness at the core.

I never tried many of the above kind of prints, partly because it involved the trouble of albuminizing my own paper, there being none of that kind sold, and partly because I got upon another hobby, and lost sight of that method altogether. But the hint may be found of some use to those who wish to persevere with printing on albuminized paper, viz., to use the thinnest fine paper they can get in the market. The albumen gives very thin paper considerable strength to bear handling.

Following out the above idea a little further, I have said that the best plan is not to put the hypo, or fixing material, whatever it be, into the *paper* at all. It has often been remarked that collodion positives on glass have been found very lasting. I have them more than fifteen years of age, unvarnished, and showing no symptoms of decay.* This may partly arise from the composition of the image being different from that of a common print; but not entirely from that cause, as it is well known that ill-washed negatives and collodion positives do very quickly fade. The permanence of these greatly depends on their proper washing; but one-tenth of the washing suffices that is needed for a silver print upon paper. Can we not, then, take a hint from this? Why not print our positives on glass—by preference opalescent glass—wash them thoroughly, and then transfer them to paper? The film being very thin, and supported behind by the hard glass, a stream of water poured from a jug or tap for a short time drives the fixing material out of them; and even though a faint trace should be left, it does not afterwards exhaust its whole power upon the print, but will become absorbed and weakened by the dispersion within the clean paper to which the picture is transferred, or on which it is mounted. In an ordinary paper print the injurious chemical comes out from the heart of the paper, where it is lurking in greatest quantity, and attacks the print; but in a transferred picture such as I have mentioned, any injurious chemical left in the thin film must be very small indeed, and, by spreading partly within the paper, must become so weakened as almost to be harmless.

The plan recommended is no novelty, so far as the mere production of pictures is concerned; but I have not noticed that its adoption has been urged upon the grounds which I have now mentioned. Having got a couple of beautiful collodio-chloride prints on paper sent me by Mr. G. Wharton Simpson, who mentioned at the same time that they would not keep, as he had not taken time to wash more than the first excess of hypo out of them, I gave them a further soaking and washing myself; but it occurred to me at the time how much easier it would have been to insure the expulsion of the hypo had they been on glass. I therefore throw out the above suggestion as deserving consideration upon the grounds stated. If a sheet of opal glass is slightly waxed, then well rubbed up, and coated with the prepared collodion or with salted albumen above ordinary plain collodion, it can be sensitized and as easily printed on as on paper; and it is not difficult to lift it from the glass to clean paper by one or other of the methods that have long been known. Such a print will be found to possess the fine polish, though, perhaps, not the ivory-tone, of Mr. Burgess's Eburneum specimens, one of which, recently sent me, I must characterize as a morsel of great beauty, and beside which any ordinary print looks coarse. While I think, however, that this method might be adopted with several advantages for small pictures, still, for those of a larger size and greater value, I am disposed to recommend the carbon.

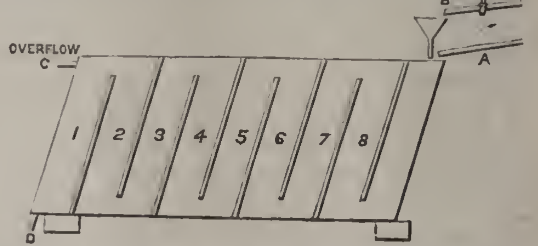
DRY PLATE WASHING BOX.

BY A. SEELEY.

As I have had a good deal of experience with tannin plates, and as that process is generally charged with a great tendency to pinholes, I venture to trouble you with one or two suggestions.

At one time I never went out with a batch of plates without feeling certain of having to spend much time on my return in touching up spots, or stopping out skies; now the case is quite the other way.

I tried all kinds of washing, distilled water being as bad as any. One day the thought struck me that if I put the plate into an upright dipping-bath, and caused a constant stream of water to pass over it, any formation of iodides or chlorides, &c., would be carried away. This led to the idea of a compound bath such as I have sketched below.



A is the inlet for water constantly flowing in a small stream. B a pipe from which is always dropping a dilute solution of common salt, with a small quantity of acetic acid. C, a half-inch pipe, to act as an overflow or waste. D, a quarter-inch pipe, to take off the heavy chloride of silver, and anything that goes to the bottom. Spaces 1 to 8, dipping-baths, with a dipper in each, to receive plates from silver bath as fast as ready. In this way plates would be brought direct from the silver bath and placed on the dipper in No. 1, and worked up and down a few times; then, when another was ready, No. 1 would go into No. 2; when a third was ready the second would go into No. 3, and so on, putting each plate into No. 1, and then into either of the other spaces till all were full.

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* We have one in our possession taken by Dr. Diamond, in 1850, some months before the collodion process was published to the world. It shows no change whatever.—Ed. Photo. News.

Next begin by taking out the plate from No. 2, holding under a stream of clean water for a minute; then coating with two lots of tannin, the first thrown away, the second kept to act as first for next plate.

I made the box myself with common deal, and gave it three or four good coats of shellac varnish; the pipes are gutta-percha.

But the washing is by no means the *only* cause of pinholes. Nothing can be much worse than the horrid tin boxes supplied as travelling-cases for plates; the poor plates go jogging up and down the whole way, rubbing off no end of little bits, from the size of a cheese-mite to the size of the piece he puts in his mouth; and these are the causes of those patches of pinholes all near one part of the plate so often seen.

Carry your plates packed in paper, and only put out one day's work at once, and that into dark slides, or a wooden box that has had half-a-pint of thin glue shaken up in it before using, and allowed to dry well, and so retain any loose particles. The plates in this box must be well padded, so as to prevent all movement.

Another cause of *very small* pinholes all over the plate is using one bath for many plates in rapid succession. What the precipitate is I cannot certainly say; but I have often found something like flue or light-grey dust at the bottom of a bath on the morning after use.

Always use three or four baths, and do not prepare more than twelve or twenty plates in any *one* bath on *one* evening.

The precipitate is in the form of needle-like crystals, and is *not* iodide of silver, as I once diluted my bath so as to make it very milky with iodide, and a plate prepared in it was perfect.

ON DRY PLATE PROCESSES.

BY A. DE CONSTANT.*

In a former communication I have spoken of the old gum dry process made known several years ago by M. Thomas Sutton. In forwarding you specimens of this process, I laid particular stress upon its rapidity, as also upon the delicacy and atmospheric perspective exhibited in its results, all of which were peculiarly fine. As I alluded to the process, however, merely as accessory to, and in comparison with, Mr. Baratti's coffee process, I did not then make known all I knew respecting it, and propose therefore to complete my remarks upon this occasion.

The rapidity of the gum process appears to me to surpass that of all other dry plate methods, and when employed with certain modifications it will, I feel sure, rival the wet process in its sensitiveness. This special quality of gum to impart rapidity is so conclusive that when a solution of that substance is added to any of the slow-acting preservatives, increased sensitiveness is at once imparted. Unfortunately, as in all good things, there are some drawbacks to its employment, and the simple gum dry process is beset with several serious inconveniences, the principal one being its great tendency to rise from the glass; small blisters are formed over the surface of the film, which assumes the appearance of a toad's skin, a result which is sometimes unavoidable even by carefully imparting to the plate preliminary coatings of the best description. The preservation of plates prepared by the ordinary gum dry process is likewise a matter of some difficulty; I have, it is true, kept some for several weeks in a moderate temperature, but, when subjected to considerable heat, the change is very rapid; marble-markings and solarized effects of the most extraordinary description being produced.

Lastly, the tendency of the gum to absorb moisture necessitates the precaution of employing such plates only whose surfaces are perfectly dry.

I have experimented with the gum process without sugar, with white sugar, with sugar-candy, and with boiled syrup of gum, and I have always suffered more or less from the inconveniences I have mentioned. Nevertheless, with syrup of gum prepared in certain proportions (which possesses the advantage of furnishing a solution always ready for use), I have obtained satisfactory results as regards the solidity of the film; but boiled syrups, I find, exert a specially injurious effect upon the plates after preservation for a few days, by reason of the formation upon the film of minute crystals, which are very tenacious, and resist altogether the action of washing. These crystals give rise to minute spots upon the sky of the negative in the form of circles or stars, defects which, in my opinion, will have the effect of banishing boiled syrups from among the list of ingredients suitable for the preparation of dry plates.

Sugar simply dissolved does not possess the disadvantages above alluded to, and the addition of sugar-candy to the gum process, as proposed by M. Manners Gordon, which has the effect of rendering the results more vigorous and brilliant, must therefore be considered as an improvement. This modification of the gum process does not, however, constitute the whole of M. Gordon's dry plate method, which he has endowed with two special improvements, viz., the addition of gallic acid to ensure better keeping qualities, and the employment of iron development, which, by reason of its astringent character, prevents the rising of the film.

Thus the endowment of the film with solidity, security, and good keeping qualities is the result, brought about by M. Manners Gordon's modifications, for in proceeding according to his formulæ we are certain to produce negatives which have all the appearance of good plates obtained by the wet process, and which are scarcely to be distinguished from such even by the most practised photographer. What more can be desired? will be asked. At the risk of appearing ridiculous, I would timidly assert that for reproduction of distance, perspective, and natural tints, and for other artistic considerations, I prefer the results obtained with certain dry collodions to those furnished by the wet process. For this reason I am one of the first to appreciate the valuable improvements which have been effected by M. Manners Gordon, and it is in order to make the process as widely known as possible, as also to correct an important omission which occurred in the formula published in the *Bulletin* for September last, that I have chosen to speak on the subject on the present occasion. According to my experience, I have found that the addition of gallic acid prevents solarization, regulates the development, and endows the plates with great preservative qualities, both before and after their exposure, facts which have been confirmed by a recent communication of M. Gordon's. Count Nostitz, in a paper read before the French Photographic Society, spoke highly in reference to the rapidity of the process. I have great confidence in the statements of this skilful amateur, and I am ready to admit that with a Gordon plate freshly prepared, with an extra-rapid lens, and with an exposure more or less long, it would be possible, as Count Nostitz states, to obtain a portrait in the open air, or even in the studio, but this would be an exception; for after very numerous essays, I have fixed the exposure of plates prepared by the simple gum process, when taking landscapes with contrast in a good light, at three times that necessary for a wet plate; and if I do not mistake, it has always appeared to me that the addition of gallic acid, even when supplemented by iron development, tends to render a somewhat increased exposure necessary.

The strength of the solution of gallic acid proposed by M. Manners Gordon is 3 grains to the ounce of water.

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* Read before the French Photographic Society.

This is well filtered and poured upon the sensitive plate, after being carefully washed. On this is poured the 1 per cent. solution of gum, mixed with 1 per cent. of sugar-candy recently prepared. Everybody will understand that on the application of the gallic acid to the sensitized film every trace of free nitrate of silver should be removed by a very scrupulous washing of the plate. M. Gordon washes the plates three times in distilled water, then allows them to remain at least one hour in ordinary water, previously to rinsing them again in distilled water and applying the preservative coatings. Major Russell asserts that an intermediate washing in salt water is necessary. With my ordinary process, which consists in washing the plates with a copious supply of spring water by means of a rose, both before and after their sojourn in the rain-water bath, I have never experienced either stains or any other misfortunes.

I shall not speak here of M. Gordon's iron developer formula, as it is well-known, and has already been quoted in the *Bulletin;* but I ought to remark that this developer is a very excellent one, and particularly suitable with dry plates, for the addition of silver has but a very slow effect upon it, and the mild and progressive action exerted by it upon the more or less lighted portions of the image gradually reproduces all detail, without the appearance of stains or any other defects. I have employed this same gelatinous solution of sulphate of iron with similar success in the development of plates prepared by the coffee process.

In a publication relating to M. Gordon's new processes it has been affirmed that it would be advantageous to mix together the solutions of gum and gallic acid, in order to form a more homogeneous coating, the materials being used in the following proportions :—

Water	100	cub. cents.
Gum*	4	grammes
Sugar-candy	1	"
Gallic acid	½	"

This modification, which would effect an economy in labour and time in the preparation of plates, had already been indicated and approved of by M. Manners Gordon, who explained, however, that he had not adopted it on account of the dark colour which was produced on mixing the gum and gallic acid together, fearing that the tint of the preservative would exert a prejudicial effect upon the length of exposure. This is no doubt a question deserving of study, for it would be easy to mention preservatives as transparent and colourless as water which require a very lengthened exposure, and others of a yellow and red colour which are very rapid in their action. I should very much like to hear the ideas of some of my colleagues upon this subject.† *En attendant*, I have experimented with the mixture of gum and gallic acid, and have obtained some very satisfactory results; in fact, so pleased have I been with them, that were my investigations somewhat more complete, I should not delay in recommending the employment of this modification. The exposure, far from being lengthened, appeared to me at least quite as short, and the employment of the developer in this form recalled to mind certain effects which are obtainable in the simple gum process, and which may be observed in the specimens which I have enclosed with these remarks.

It has been stated that M. Manners Gordon recommends in the preparation of his plates a mixture of different commercial collodions. This is not the case. M. Gordon has merely stated that any English collodion in the market may be employed, if an addition of bromide of cadmium to the extent of 2 grains per ounce were made. This advice I have followed in regard to Mawson's excellent collodion, which I am at present using.

In the majority of *clichés* which I have prepared according to the Gordon process, I discovered, after washing and fixing, minute holes in the skies of the negatives of different forms, which I attributed solely to the imperfect filtration of the gallic acid solution; for in the preparation of waxed paper, in days gone by, it will be remembered how difficult it was to dissolve the gallic acid and to render it limpid. To remedy this inconvenience, and to have a solution always good and ready, I recollect adopting a suggestion of Mr. Crookes, who proposed the employment of an alcoholic solution of gallic acid, which was afterwards to be supplemented with water. Possibly a gallic acid solution of this description might be used in the Gordon gum process. As regards the preservative qualities of the mixed gum and gallic solution, it may be kept to the last drop by the addition of a small quantity of essence of cloves.

I have already said that in the gum dry process, as is the case with most dry plate processes, it is necessary that the plates should be dried with the utmost care, and every glass should be subjected to a rigid examination before being put away into store. Many curious facts which I have recently noticed convince me that the drying of plates is a subject to which sufficient attention is not given. MM. Baratti, Russell, and Carey Lea have already made some interesting communications on the subject, but they have not been regarded with the attention they deserve.

In a future article I myself propose to say a few words touching this important point.

ON THE PRODUCTION OF PHOTOGRAPHIC ENAMELS.

MM. Geymet and Alker have just issued their promised volume on this subject. It is described by the authors as a practical treatise for the photographic enameller, and is stated to contain the whole secret of the production of permanent pictures upon glass and porcelain. We make a few extracts from the preface :—

"It was not our intention to produce a scientific treatise; we should in that case have had to describe many things irrelevant to the subject in hand; it would have been necessary for us to have entered into the details of the art of enamelling, to speak of the importance of ceramic porcelain, &c.; and, once on that subject, we should have been in a fair way of producing a long, and probably uninteresting, volume, which would not by any means fulfil the object we had in view."

"We shall be silent, therefore, upon this subject, as also upon the origin of glass and enamel, merely saluting, *en passant*, the names of Lucca de la Robbia, Bernard de Palissy, Bollger, and Wedgwood; for in a practical work one ought not to stray from the beaten path to touch upon historical and scientific subjects, excepting where such a course is absolutely necessary. Thus, if the reader wishes, for purposes of recreation or otherwise, to bring photographic enamelling to a successful issue, he need only follow our book and adopt our formulæ, and he will then find that this interesting branch of industry does not present any serious difficulties; for he may rest assured that any mechanical operation which is successful in the hand of one person may be performed by anybody who possesses a moderate amount of skill and taste."

"The aspirant must not be scared away by apparent difficulties, for any one reading this work, and not essaying the process, may believe in the impossibility of obtaining perfection. To trace an image of extreme delicacy with a crude badger pencil, which is not that of an artist, by means of vitrifiable powder, upon a glass which has been exposed to light for a few seconds; to recover the powder upon a film of collodion, and to transport the whole to a plate of enamel; to destroy the collodion without regard to the image which it is impossible to fix, to wash the enamel powder several times in water, to introduce the plate into the muffle furnace, and to withdraw from the fire an incandescent picture of the most exquisite description. All these appear to be operations of a very delicate nature. Not at all; the whole process is, in fact, perfectly simple. Some study was, of course, necessary to bring out a perfect result in the first instance, but now that the road has been discovered, nothing remains but to follow it. If, therefore, the operator reads this book attentively, and adheres closely to the practical details, he will regularly obtain successful results, provided he always employs good negatives, and, above all, good positives."

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* M. de Constant has called our attention to an error in the formula as stated in the *Bulletin*, in which the gum is stated at 1 gramme instead of 4 grammes.—Ed. Photo. News.

† Mr. Gordon, in a communication to our Year-Book for 1869, states that, after some experience, he does not find any disadvantage from the dark colour of the mixed solutions.—Ed. Photo. News.

"Art must not be confounded with photography. It is unnecessary to be a talented artist in order to produce a perfect enamel; one need merely be a skilful workman. Chemistry controls certain reactions, and even the most ignorant person, endowed with a little taste and patience, may, after a few trials, become a master in the art, and obtain results with which he will be the first to be astonished."

"In photography, the exercise of the mind is unnecessary when working in the beaten track; a certain amount of skill is requisite to give a natural and graceful pose to the model, and to choose a judiciously lighted situation. One ought, besides, to know the value of shadows, and to possess a superficial knowledge of the compounds and mixtures employed, and also to be able to judge of the opacity of a film necessary to produce a good negative. There is nothing else to learn, and when this has been acquired, you are master of the subject. All the rest is mechanical, and the reactions which astonish you so much would be produced without you, or, rather, without your co-operation. It is the same with your heart, that beats independently of your will, and with the crystals which are forming in the saucer under your eyes, and which require no aid from you, for the laws of attraction suffice to bring about the change. We do not mean, however, to deprecate photography, nor those who practise it. On the contrary, this beautiful invention renders every day the most important services. We merely say the truth, that the first comer, without any lengthened tuition, may become as skilful as, or even more skilful than, the most consummate artist; for when the latter employs the camera, he abdicates the kingdom of art, and receives the title of photographer."

"Enamelling is certainly one of the most interesting phases of photography, and the pictures produced by it possess one great advantage over other photographs, viz., that of permanence. All prints produced during this century by means of salts of silver will inevitably perish; but the results obtained by heliography and the enamel process combined are incapable of any alteration. This is the true path whither the amateur and the photographer should bend their steps, and we desire, therefore, to make everyone acquainted with this interesting section of photography, which has hitherto remained the secret of a very few. Several theories of the process have been published, but in a somewhat unintelligible form, and silence has always been preserved in regard to detailed operations which, as in other processes, constitute the whole proceeding, and without a knowledge of which it is impossible to succeed."

"If the ancients had been acquainted with this process, it would not have been so difficult for us to reconstruct history. Medals half devoured by rust have saved the name of many a great man; the lines have altered, although the souvenir remains; but if enamel had been in use, we should have had a likeness, together with the precise date."

"The pictures of the old masters are perishable by fire and by age, and those among them which date the farthest back already require to be retouched; the stained windows of our churches, on the contrary, have retained the original lines and colours which the artist fixed upon them; and the old enamel medallions upon shrines and coffers of the middle ages have lost nothing of their freshness, and still attest the immense advantages possessed by a material unalterable by time. Before the present century it was very difficult, and within the reach of but few, to reproduce and fix, by burning in, the features of a historical personage, and thus produce an imperishable picture. Besides, those who painted on enamel were generally but little skilled in this kind of work. At the present day, thanks to photography, the question is changed, and it is possible, without difficulty, and even without talent, to fix upon vitrefiable matter the most striking likenesses, which are alike proof against fire and age."

After entering upon an explanation of the difference between producing monochromes upon enamel and coloured photographs, the latter necessarily requiring the assistance of a skilled painter upon porcelain, the authors conclude by saying:—

"We warn our reader not to pay attention to any directions he may elsewhere receive, or to any objections which may be made to the process we indicate, under the pretext that such and such a photographer operates in a different manner. It is clear that all paths cannot lead you to the goal, but, at the same time, it is perfectly possible to arrive at the same point by different ways. We advise our readers to follow our method, for its succeeds every day in our hands, and we promise them a similar success."

Scientific Gleanings.

A New Silver Ore.—A new mineral, called parizite, was discovered in the district of Mono, California, by Dr. Paris, in 1865; it has recently been analysed by Professor Arents, and yields 6·12 per cent. of oxide of silver. It is found in amorphous masses of a yellowish colour, or blackish, with a conchoidal fracture; its sp. gr. = 3·4; it melts easily to a black slag, and dissolves partially in acids. It contains —

Oxide of antimony	47·65
" copper	32·11
" silver	6·12
" lead	2·01
" iron	2·33
Water	8·29
Arsenic	traces.

This important mineral forms nodular masses in layers of one-third to upwards of one yard in thickness, accompanied with silver lead ore.—*Scientific Review.*

The Solar Heat: How to Make the Pot Boil.—M. Mouchat, who has been experimenting on the utilisation of the solar heat, lately sent a paper on this subject to the Academy of Sciences. He states that, according to his experiments, upwards of three-sixths of the solar heat might be gathered at a small cost. At Paris a surface of one square metre normally exposed to the rays of the sun receives, on an average, at any time of the year, on a fine day, ten units of caloric per minute. Such a quantity of heat would make a litre of water at freezing-point boil in ten minutes, and is equivalent to the theoretical action of a one-horse power. He further states that he had proved the possibility of keeping hot-air machines going by means of solar rays, and had succeeded in making a few litres of water boil by exposure to the same agent; and in June, 1866, he had made a small steam-engine work by converting water into vapour with the assistance of a reflector one metre square.

A New Reaction for Albuminous Matters.—Herr Froede has recently found a very simple test for the presence of nitrogenous matters, such as albumine, fibrine, caseine, &c. When a solid substance containing such compounds is moistened with sulphuric acid, in which some molybdic acid has been dissolved, they take an intense blue colour. Cereal grains and muscular fibre are very remarkable in this respect.—*Scientific Review.*

Conversion of Wood Spirit into Spirit of Wine.—A most important discovery is announced as having been made by Herr Siersch, an analytical chemist at Lemberg—namely, the conversion of methylic into ethylic alcohol; in other words, the transformation of wood spirit into spirit of wine. Up to the present moment we do not know the details of the process, nor whether it can be carried out on a large scale.—*Scientific Review.*

Clarifying Action of Sulphate of Alumina on Turbid Water.—Whatever be the nature and quantity of the earthy substances held in suspension in turbid water, it becomes fit to drink in from seven to fifteen minutes if to each litre there be added .01 grammes of finely-powdered alum, care being taken to agitate the liquid when the alum is introduced (this is about ¾ lb. per ton of water). It potash alum is used the alum is decomposed into sulphate of potash (which is all dissolved by the water) and sulphate of alumina, which, by its decomposition, purifies the water. The alumina separates in an insoluble form, and carries down with it, as it precipitates, the matters which render the water troubled, and the organic matter. The acid attacks the alkaline and earthy carbonates and transforms them into sulphates. The water becomes slightly richer in bicarbonates and free carbonic acid, whilst all organic matter is destroyed. Seven parts of sulphate of alumina will purify as much water as ten parts of rock alum or potash alum, and the sulphate of alumina does not introduce any alkaline sulphate into the clarified water.—*Technologiste.*

Correspondence.

OPERATING EXPERIENCES.

RECTIFYING OLD BATHS—IODIDE OF MERCURY INTENSIFYER—PAPER DISCOLOURING—SUGAR IN THE PRINTING BATH.

DEAR SIR,—On the 27th March this year you were pleased to publish some of my experiences with baths. Four of these were afterwards spoiled by my adding too much permanganate, which made them have the effect of being alkaline. A few drops of nitric acid were added, which helped them for a day, but next day they were as bad as ever. They were treated so for several days. At last one of them got half an ounce of the acid, which was too much for it, as you may well suppose, for it refused to work at all. The four baths were then amalgamated, but as they did not give any promise of doing well, they were laid aside, and ever since have continued to throw down a light deposit; and though they have been carefully filtered several times, they still continue to throw more down. They may do some good yet, but probably reducing them to carbonate of silver will be the wisest thing to do. Other two new ones were got ready and laid by until the three that were still good, and which were being used one after the other, showed signs of exhaustion, when they were taken up, and the old stains on the negative made their appearance again, and refused to leave. At last the new ones were mixed with the old ones, and made into five baths (or one large bath) of 33 grains to the ounce, which were used one after the other as formerly; strengthened when necessary. They have done duty for six or seven months, and can be taken up at any time with as much certainty as ever. Sometimes needle-like crystals fell to the bottom of some of them; these were simply filtered out, and the bath was as good as ever.

In May last I dissolved 2 ounces of silver in 2 ounces of water in a blue glass bottle, and fastened it to the top of my glass house, and it remained thus exposed to all kinds of weather for about six months, when it was taken down and water added until it indicated 33 grains of silver; was filtered, and it made a good bath at once, without any addition whatever, not showing the least inclination to leave the matt stains on the negative that have vexed one so much for two or three years past when commencing a new bath. There appears to be a change somewhere, but whether on the water, or silver, or the two in combination, the writer of this cannot pretend to say.

Being one of those who intensify with iodide of potassium and bichloride of mercury, as described by you in the last part of your article on 9th October—having adopted this method as the most convenient—I have noticed, with "Amateur" (PHOTOGRAPHIC NEWS, December 4th) the tendency of some plates to turn light yellow, and have blamed imperfect washing, or the solution being used too strong, as the cause. I also notice that one or two negatives taken four or five years ago, and which had been brought up to the yellow tint, are showing signs of fading, while others taken about the same time show no signs of change of any kind. I never wash with anything but clean water.

There was a sample of paper fell to my lot this season, that, half an hour after it was sensitized, turned nearly as brown as copper; one and a half minutes was my usual time for floating on a 70-grain bath for (say) three years. This paper was laid aside until an opportunity was given for experimenting with it, for proof was given by the gentleman* who supplied me with it that it could not only be used, but that it was a first-rate paper. So, after a month or two, I found that twenty seconds' floating instead of one and a half minutes was what was wanted to make it "all right."

Four cartes are sent along with this, not only as some indication of what may be done with the above baths, and to ask you as under, but also to show you that a darker background has been used by me for "figures printed out," and to thank you for the suggestion. The young lady reading was taken with the bath that was made with the silver solution that had been sunned so long before it was made up; the gentleman was taken with one of those that was mixed new and old together; the other two are sent to see if you will be so good as to inform me if sugar in the printing bath should give me No. 2, which was printed on the day after it was sensitized, as pure in the white as No. 1, which was printed, toned, &c., the same day it was floated for twenty seconds on the bath; or is No. 2 as pure as may be expected?—I am, dear sir, yours truly, W. C.

[In our experience, paper floated on a printing bath containing sugar has given prints with perfectly pure whites after keeping some weeks. But there is, doubtless, a difference in samples of paper. But all the cards are good, No. 2 showing very little indication of discoloured paper.—ED.]

COCKLING OF LARGE PRINTS IN PRESSURE FRAME.

"Every little makes a mickle."

SIR,—To what I am going to communicate here, Messrs. So-and-so would say, "Any fool knew that!" I'd excuse them, for when I made the little fact plain to myself, said I to myself, "What a fool thou must have been not to have seen that before!"

Many times have I been vexed, in printing, that sometimes the albuminized paper would not lie flat in some places, however much packing I added to increase the pressure. At other times the whole paper print is ruffled. My printer often tells me that it is of no use to dry the paper before the fire (when I want things quickly done), because it always cockles-up the paper." I have had serious losses in large prints from this cause, so I turned my attention to it the other day.

The packing is the cause. Warm the papers or cloths thoroughly before they are placed in the pressure-frame, and no more cockling.

The reason is self-evident; and some amateur will thank me for having drawn his attention to it.—Yours truly,

O. G. REJLANDER.

Talk in the Studio.

AMERICAN NATIONAL PHOTOGRAPHIC ASSOCIATION.—An association of photographers has recently been formed in the United States, aiming to have a national character, and to extend its action and influence throughout the whole of the States. We have recently received a courteous letter from its esteemed secretary, to the following effect:—"My dear sir,—At a meeting of 'The National Photographic Association,' held in this city,

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* Mr. Stuart, of Glasgow and Helensburgh, to whom I am obliged for many useful hints.

December 2nd, 1868, you were unanimously elected an Honorary Member. A copy of the proceedings of our meeting will be sent you as soon as printed. If you approve of our objects I should be glad to have a reply from you. Anything you can do to aid us in the elevation of our beautiful art and its votaries will be most gladly accepted, in the way of commending our Association when you have opportunity, or by contributing papers, &c., on subjects of interest in photography for our annual meeting and exhibition, or for the Journal of our Association.—Very truly yours, Edward E. Wilson, Secretary."

Photographic Enamels.—We have been favoured by Messrs. Schmerl and Ellis, with a sight of some photographic enamels of rare excellence, produced by Herr Greiner, of Apulda. The enamels are brilliant and delicate, excellent in colour, sharp and well modelled. They are applied to cups, plates, pipe-bowls, and tablets of various kinds and sizes. The rich warmth of colour is exceedingly satisfactory. We regret that we can furnish no details of the process by which they are produced; but we understand that Messrs. Schmerl and Ellis, as agents for Herr Greiner, are about to introduce the application of the process as a branch of commerce, which will, we hope be successful.

Photographic Book Illustration.—A correspondent has kindly called our attention to a notice of Christmas books in the *Times*—which we had already seen, by the way—in which several books with photographic illustrations are noticed. We regret that we have seen nothing to suggest that we were in error in supposing that a falling off in this application of photography was manifest this year. We have looked carefully in every quarter, and find the number of books for the season with photographic illustrations is decidedly limited.

Vignetted Heads.—Mr. Hatch sends us some unusually fine examples of vignetted card heads, in the style first made popular by Mr. Reutlinger. He says:—"A word or two, perhaps, may not be out of place relative to my method of manipulation. I never make a new bath, except compelled by accident, and seldom filter—only about once in three months. I vignette through a small hole in cardboard, raised a considerable distance from the negative, to produce softness and artistic effect. I always use reflected light on one side, and develop with the usual iron, pyro, and silver salts, separately and together."

Selling Gold and Silver Jewellery without a Licence.—A correspondent says:—"Noticing some time since, in a contemporary journal's replies to correspondents, that no photographer could sell articles of silver or gold without a licence, and knowing such reply to be wide of the mark, I thought the facts might be of service to some of your readers, viz· That any one can sell any article, either of gold or silver, either plated or solid, provided that if the article be of solid gold it must not weigh more than 2 pennyweights, equal to 48 grains; and if it be silver it must not weigh more than 5 pennyweights, equal to 120 grains. For selling articles of gold and silver above those weights a plate licence is required. It must also be understood that not any of the articles sold without a licence be what is termed plate, meaning that they must not have been assayed, proving them to be standard gold or silver, having the Hall mark, and the head of the reigning sovereign upon them. It also may be necessary to say that no one is prevented by this Act from selling his watch or old plate, should occasion require; but that he shall not trade in such articles within the meaning of the Act."

New Actinic Artificial Light.—The *Standard* says:—"Mr. James Allison Hogg, gas engineer, Edinburgh, has discovered a method of producing intense light with coal gas by mixing it with atmospheric air. The mixture of gases is lighted after passing through a tissue of iridio-platina wires at a determined pressure. In a few seconds the metal becomes heated up to a white heat, the flame disappears, and an intense white light is the result. An enlarged picture has been taken by its aid on prepared photographic paper. The light will burn in a gale of wind without any protection round it, and a downpour of rain will not affect it."

The Extensive Piracy Case.—At the Mansion House, William Coleman, 48 years of age, and John Lawrence, 57, hawkers; and William Hooper, 24, a photograph mounter, were again charged, on remand, before the Lord Mayor, with conspiring together to sell and publish pirated copies of certain engravings of great value belonging to Messrs. Henry Graves and Co., printsellers and publishers in Pall mall. Some further evidence was given tending to implicate all the prisoners, and the Lord Mayor expressed his intention to commit them for trial. Mr. Oke, the chief clerk, told the prisoners that they would be charged with a conspiracy to injure Messrs. Graves in their business, by selling and publishing the photographs. The prisoner Coleman replied he was not guilty, Lawrence that he would reserve his defence, and Hooper that he did not know, when he was mounting the pictures for Lawrence, that he was committing any offence. The Lord Mayor committed them for trial at the Central Criminal Court, and admitted them to bail in the meantime in their own recognizances in £100 and two sureties in £50 each. Lawrence and Hooper at once found the required bail, and were released.

To Correspondents.

⁂ The Title and Preface to our last volume is unavoidably delayed. It will be ready for distribution with our next, consisting of four pages extra, which will be given without extra charge.

The Year-Book of Photography and Photographic News Almanac for 1869 is now ready. Besides a complete statement of all new and modified processes, and suggestions and improvements introduced during the year, it contains upwards of forty original articles, by the most distinguished photographers of the day, written expressly for the Year-Book of Photography, embodying the results of a year's experience, and the suggestions for improved practice arising out of such experience. All the usual processes of photography are re-stated, with the modifications in their practice adopted by the most able and successful photographers. The Year-Book for 1869 is larger and fuller of information than any previous issue. The publication has been delayed a few days in order to make arrangements to meet promptly a very large demand.

Our New Volume.—We have to thank many correspondents for kind greetings and for their expression of satisfaction with the character of the volume just closed, and suggestions for the next. We shall have pleasure in endeavouring to utilize all the valuable suggestions which can be made available. For the rest, we shall endeavour to maintain all the existing features which have met with so much approval, and to add some new features, preparations for which are in progress. Although the Lessons on Pictorial Effect are concluded, we shall not neglect the subject of art, giving such illustrations as may be necessary to elucidate instructions. Examples in illustration of some new processes are in preparation, and will be duly presented to our readers. Various series of interesting articles are in preparation, and will appear from time to time as the pressure of matter of current interest will permit. Contributions from the pens of the following gentlemen may be expected in the course of the year:—M. Adam-Salomon, Mr. Bedford, Mr. H. P. Robinson, Mr. Mayall, Mr. Mudd, Mr. Hughes, Mr. Crookes, Mr. Blanchard, Mr. Spiller, Mr. R. Manuers Gordon, Mr. Swan, Mr. Rejlander, Mr. Williams, Dr. Authony, Dr. Vogel, Dr. Towler, Dr. Liesegang, Dr. Diamond, Dr. Kelsall, Mr. W. H. Davies, Mr. Fry, Mr. Cherrill, M. do Constant, Mr. Arthur Taylor, Mr. Blair, Mr. England, Mr. Pritchard, Mr. Whiting, Mr. Bovey, Mr. Waterhouse, Mr. Paget, Mr. Werge, Mr. Mayland, Mr. Wardley, Mr. Bolton, Mr. Mawdesley, Mr. Martiu, Mr. Window, Mr. Winstanley, Mr. Waldack, Mr. Wilson, Mr. Carbutt, Mr. Gaffield, Mr. Notman, Mr. Burgess, Dr. Phipsou, Mr. Keene, "A Practicat Man," Mr. J. R. Johnson, F. Eliot, Mr. Easthan, Mr. McLachlau, "Lux Graphicus," "Respice Finem," the Hon. N. Joscelyn, "An Old Photographer," Mr. Cocking, Mr. Pierce, Mr. Seeley, Mr. Gulliver, and several other gentlemen whose experience in the art gives value to their contributions.

D. Scott.—Grasshoff's work on retouching and colouring photographs is published in German. Some further extracts from it are translated, and await a time when we can spare space for their insertion. "Harmonious Colouring Applied to Photographs," price one shilling, published by Newman, Soho Square, will suit your purpose. We have occasionally seen very fine examples of American coloured photographs, but they are not better than the best work in this country.

Molestus.—It is difficult, unless you have very powerful sight, to focus perfectly sharply anything so small as a card head without the aid of a focussing-glass for magnifying. We prefer No. 3. In our forthcoming Year-Book you will find a hint on the subject.

Light.—It is quite possible to get a sample of glass which will admit a large quantity of non-actinic light, and exclude such rays as will act on the sensitive plate; but it requires a little care in the selection. Some samples of glass which appear to the eye sufficiently of a non-actinic character are really worthless. Some samples, for instance, appear to possess a deep yellow tint, but are really of a light brown colour, through which actinic light can pass tolerably freely. The best kind of glass is that the yellow tint of which is produced with oxide of silver. There are two modes of selecting glass with certainty: one consists in examining it through a spectroscope, and ascertaining that it cuts off all the actinic rays; or actually testing it with a sensitive plate. You can add to the non-actinic character of the glass you already have in your window, either by coating it with one of the non-actinic varnishes of which we have before published formulæ; or you can apply the non-actinic collodion described by Mr. Werge in our Year-Book just out.

P. Edwards.—There are various methods of producing enlargements on canvas ready for painting; unfortunately, they would occupy too much space for repetition in this column. You will find two or three methods described in our last volume: there is one on page 179, and one on page 272. The most suitable enlarging apparatus for the purpose is a solar camera. For printing on ivory we have also published several formulæ in back volumes. Perhaps there is no method more simple or satisfactory than the collodio-chloride process. Its mode of application is described in our last Volume, page 302, and also in our Year-Book just out.

Amateur.—The "D" lens is more rapid than the rapid rectilinear; but the latter should be chosen for views, &c. The latter requires about twice the exposure of the former. Both lenses are double combinations, but the latter consists of two cemented compounds, and in the former the back lens is uncemented.

R. D. Ewing.—We will give your desire our best attention. We hope to write shortly.

W. J. A. G.—We are glad to learn that we have been of so much service to you. Although we undertake to help our readers out of difficulties as a duty, that duty becomes a pleasure when we are informed that our aid has been efficient. The markings you mention as occurring only with a certain lens and camera are singular. Flare generally arises from an image of the stop, or of the light coming through the stop, and is a round spot; the edges, from being out of focus, graduated off. The mark on the plate you sent was not round, but of an irregular shape, and its appearance suggested that it was a stain, due either to the preparation or development of the plate. If you are satisfied that the marking is not of a chemical nature, but is due to the lens or camera, examine both, and see if light is admitted in any way. Examine the image carefully on the ground glass, and note if a portion of the image upon the glass is lighter than the rest, and if that portion corresponds in shape with the marking on the plate, you may be sure it is due to optical causes, and not to a chemical defect. When flare is present in a single lens, it may be due to defective mounting, some portion of which reflects light on the plate; or it may be due to the stop being placed too much in advance of the lens. 2. You will find some further information on the gum process in the present number, and also in the new Year-Book. Bees'-wax dissolved in benzole forms a good edging for plates. We do not see, however, any reason why spirit varnish should injure the film beyond the space whereon it is applied. The burnt sienna should be carefully ground up with a little size or gum-water to make it suitable for applying to the back of the plate. You will find a good hint for backing plates in Mr. Werge's article in the Year-Book just out. Thanks for your good wishes.

Germanicus (Bangalore).—Your former letter and enclosures were duly acknowledged in the News at the time they were recieved. We then promised to return to your interesting letter, intending to give some extracts from it, but unfortunately it got mislaid. We have since found it again, and hope to make some extracts, with comments, shortly. We shall always have pleasure in hearing from you. The missing back numbers of the News shall be sent, and also the Year-Book; and the new edition of the other work you desire. The prints you enclose are very fine, and the exposures are evidently very rapid. We can quite understand your reasons for non-publication of the formula you find so valuable, and can understand your feeling on the subject. We think, however, it is an error generally to attribute superior results to superior formula. Of course, good formulæ will produce better results than bad formulæ; but, as a rule, superior success in photography is due to superior skill, taste, and culture. The most able and successful photographers have always most readily published their formulæ. as our pages testify. They have no fear of competition, because they trust to their own care and skill, and not to secret formulæ. Your specimens have many excellent qualities, the softness, modelling, and texture being excellent; but they are not precisely of the same class as M. Adam-Salomon's. His pictures are chiefly distinguished by striking effects of light and shade, secured by very admirable lighting, getting great force and brilliancy, with singular delicacy. We shall have pleasure in hearing further from you, and shall take an early occasion of returning to your first letter. We will ascertain the state of your account.

W. T. Watson.—The parcel shall be duly forwarded.

M. B. D.—The most probable cause for your film looking dirty and opaque, and curling up and leaving the glass on drying, is having used a damp or dirty plate. It may proceed from the collodion; but a damp plate is the most probable cause. 2. Prints produced by bichromate of potash are of a brown tint; the only fixing required is thorough washing. In the process to which you refer, in which gallate of iron forms the image, bichromate is, as you conjecture, employed with the gelatine. The prints are probably permanent.

Query.—Mr. Robinsen's "Watching the Lark" is not published, or for sale. It is only procurable as a presentation print of the Photographic Society by its members. In order to become a member you will require to be proposed by a member. The subscription is one guinea per annum, and there is also an entrance fee of one guinea. Thanks for good wishes.

Novice.—Soaking albuminized paper in warm water (not hot) will readily remove the albumen. 2. Plain paper will, we should think, answer your purpose best. 3. About 4 ounces of kaolin would be sufficient to use at a time, but we prefer to clear the bath by adding a few drops of common salt and water, which throws down a slight precipitate of chloride of silver, and takes with it the colouring matter.

T. L. Howe.—The record of registrations published in our columns simply refers to those entered at Stationers' Hall by our Publisher.

J. B. B.—A 20-grain iron solution. 2. With 20 grains of sugar to the ounce of solution. 3. Ordinary loaf sugar will serve, but we prefer sugar-candy. 4. Not more than 10 minims of acetic acid. 5. Made fresh, or a few weeks old. 6. With a gelatino-iron developer the proportion much depends on the result required. For ordinary purposes 1 grain of gelatine to a pint of developer is sufficient. 7. If the proportion of organic matter be small, the exposure will not be sensibly prolonged. We prefer, in our own operations, sugar to gelatine. 8. The lens A is one of the most generally useful we know; it is excellent for views, groups, and architecture. 9. With ordinary apertures it will cover from 60° to 70°; with smaller stops a still greater angle may be secured. 10. For groups, &c., it may be used with open aperture. 11. The lens C cannot be certainly recommended. It is not so rapid as B, and does not cover so well, and you cannot be absolutely certain of the quality you may obtain. 12. Where good, it is about similar, but not so certain.

Anxious.—Opaque spots on the negative may arise from a variety of causes; turbidity in the collodion or nitrate bath or developer will cause it. Sometimes fixing in old hypo will cause such spots by a deposit of sulphur. 2. When the pyrogallic acid developer discolours, and throws down a deposit, it is better to discard it. Pyrogallic acid does not keep well in aqueous solution, especially if in any degree exposed to the air. 3. The only certain method of testing the strength of the printing bath is to precipitate a portion of it with a standard solution of chloride of sodium. Mr. Hart's volumetric apparatus answers well for the purpose. 4. Long floating on the silver bath will not produce any serious evil. The worst result which will arise from it is the silver penetrating the paper thoroughly, and the image being buried instead of on the surface. 5. We cannot, from your description, point out the cause of failure in your collodio-chloride. You do not state details of formulæ employed.

H. S.—It is probable that you are using unequal pressure on your gas-bags: probably by this means a portion of the oxygen gets mixed with the hydrogen, and so causes the explosion. It will be wise to obtain, if possible, a lesson from a person familiar with the management of the oxyhydrogen light, as it is difficult, by mere description, to call attention to all the minute points requiring attention.

Articles by M. de Constant, Dr. Vogel, Mr. Stephen Thompson, Mr. Arthur Taylor, together with "Echoes of the Month," some Reviews, Letters, Translations, and Articles by the Editor, are compelled to stand over until our next.

Received, and will be noticed shortly: "Sciography," by Dr. Puckett; "Photographic Mosaics" for 1869; Journal of the Quekett Club; a Bottle of Negative Varnish from Herbert Robinson.

Several Correspondents in our next.

Photographs Registered.

Mr. N. Briggs, Leamington,
Three Photographs of Jefferson Davis.
Mr. Kohler, Margate,
Photograph of Cliftonville Hotel, Margate.
Mr. J. V. Hatch, Huddersfield,
Photograph of Design for a Photo Calender.
Mr. W. W. Gregory, St. Helier's,
Photograph of Rev. R. Leake.

THE PHOTOGRAPHIC NEWS.

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THE ADVANTAGES OF PLAIN PAPER FOR PHOTOGRAPHS.

Who will aid in an attempt to give plain paper photographs a new trial? Not immediately, perhaps, for card portraits, or stereoscopic slides, or small pictures of any kind in which very crisp definition is of vital consequence—possibly its use for these might be adopted in time—but at present we should confine our argument for its use for large pictures, especially portraits of the class to which M. Adam-Salomon's influence has given such vogue. What are the special advantages of plain paper? it will be asked; and what the defects of albuminized paper, that it should, after so many years of service, be condemned?

Let us first briefly state the advantages and disadvantages of albuminized paper. Its advantages are: that it aids in keeping the image on the surface of the paper; that it gives a fine, hard, smooth surface, registering fine definition in the negative; that it aids in the production of vigour, force, and richness of colour in the image; that it gives transparency to deep shadows; and that, from its hard, polished surface, prints on it are less easily soiled than those on plain paper. This is a summary of very excellent qualities, it will be said. True: then what are the alleged defects?

The alleged defects of albuminized paper are few in number, but fatal in character. First, its surface, especially for large pictures, is vulgar and inartistic. This is, of course, a matter of taste, and is based partly on inherent facts, and partly on association; but we think the objection to the surface is well founded. No person with the slightest pretension to taste would varnish a fine mezzotint engraving; and the irregular reflecting surface of albuminized paper is much more offensive than an even, smooth surface of varnish. It is very difficult for a photographer who has become accustomed to albuminized prints by years of uninterrupted familiarity, who has, perhaps, commenced and wholly conducted his pictorial education on albuminized photographs, to accept this idea of their vulgarity as compared with those on plain paper; and we have not space or time now to follow out the argument. Suffice it to say that persons of good taste for the most part feel it to be a fact.

There have not been wanting a few good authorities on photography ready at all times to enter a protest, either in words or by practice, against the adoption of albuminized paper, even as a question of taste. But a more serious objection is found in the fact that the presence of albumen conduces to the instability which has been the fatal stigma on the reputation of photography. The compound formed between silver and albumen appears to be absolutely insoluble in the fixing solution employed for removing all the silver salts which have not gone to form the image. A silver compound remains in the whites of the albuminized print where no silver should be. Albumen itself contains sulphur as one of its constituents; hence, in any circumstances tending to set up decomposition in the albumen, the liberated sulphur would act on the silver in the whites in immediate contact with it, and form sulphide of silver. This is one constant source of danger to albuminized prints. The presence of a horny surface like that of coagulated albumen materially tends to retard the perfect removal, by washing, of the fixing salts from the print. This is another source of danger. The fading or discolouration from the action of sulphur in albuminized prints produces in the lights an exceedingly offensive and unpleasing colour, the "cheesy" tint in the lights of which has often been most justly condemned. These are some of the objections to albuminized paper.

What, then, are the defects and advantages of plain paper? It has only two defects which we remember: having a less polished surface than albuminized paper, it does not register fine definition quite so perfectly; and, except with a good process, and in skilled hands, it does not always yield prints so vigorous, rich, and transparent as albuminized paper.

Its advantages are numerous. The texture and surface, especially for large pictures, possess a much higher artistic quality than that of albuminized paper, and much more nearly resemble the highest forms of monochrome picture, such as fine sepia drawings, or good mezzotint engravings. It is generally much more sensitive, and permits, therefore, more rapid printing. If the images upon it lack crispness, they generally possess softness in a higher degree than albuminized paper, especially in the rendering of rugose and furrowed faces. There is reason to believe that they possess a higher degree of permanence than albuminized paper: there is no silver in the whites, and the fixing solution is more easily removed from the body of the paper than is possible from albuminized paper. The results of experience also justify the conviction that the use of plain paper is conducive to higher permanency than can be obtained with albuminized paper. When necessary, a surface equal to that of albuminized paper can be imparted to plain paper prints, so that all the advantages of the former can be secured without any of its disadvantages.

On another page we publish an article by M. de Constant, advocating a return to plain paper printing. To illustrate the statements in his article, M. Constant has favoured us with a large collection of very charming prints. Our first impression, on examining them, was that they were very fine albuminized prints, as they possess all the best qualities of the best pictures on albuminized paper. They are rich in tone, brilliant and vigorous, exquisitely delicate and crisp in definition, and have a glossy surface. On more careful examination we find that the surface is more pleasing than that of albumen. A peculiarity of albuminized paper, especially when it is unrolled, is the presence of a great glaze, and the absence of perfect smoothness of surface. The surface seems to consist of innumerable little hills and valleys, which, being glazed, reflect light in every direction, and at times give what may be termed a sparkling effect. Rolling considerably removes this, as does also a coating of encaustic paste. One great advantage of the effect produced by encaustic paste is that a smoother and less sparkling surface is produced by it. The plain paper prints of M. Constant are treated with a varnish, and we have different degrees of gloss, equal, in this respect, to the most highly or most slightly albuminized paper, but with a more pleasing quality of surface. We have every kind of tone, from a rich chocolate or chestnut brown, through various tints of sepia and purple, to rich velvety black. In all respects of appearance they compare admirably with albuminized prints, and in many points, to our taste, surpass them.

On the question of permanency M. Constant holds very strong convictions indeed, and that based upon long and careful observation. M. Figuier, in the *Comptes Rendus*, referring upwards of twelve years ago to M. de Constant's pictures in the Paris Exhibition of 1855, produced as he describes in his article in our present number, said that they were the finest in the Exhibition; and these very prints, M. de Constant assures us, are as perfect and fresh now as they were on the day they were produced. Here, then, is the strongest practical evidence bearing out theoretical probability.

Our own experience—and, we believe, that of most photographers—is in accordance with this evidence in favour of the permanency of plain paper prints. We have some reproduced fourteen or fifteen years ago quite perfect still. We believe that the charming plain paper prints of Mr. Hennah bore a character for stability, notwithstanding the somewhat suspicious character of the toning and fixing bath used.

We recently called attention to the value of the back of albuminized paper for producing plain paper prints where only an occasional copy was required. This plan is of course merely valuable as an easy mode of securing a result rarely required, and for which it was not worth while to make special preparation. But if any of our readers are willing to give plain paper a fair trial for large pictures, then the best instead of the easiest processes should be employed. The method employed by M. de Constant is very simple, and produces capital results. We shall in our next return to the subject and refer to one or two other modes of printing on plain paper which have not received sufficient attention. In the meantime we appeal to those, at least, of our readers who have time for experiment, to try the effect of plain paper for large pictures. They will produce prints more conformable in character with the best types of monochrome art, and prints which will in all probability have a better chance of permanency. If depth and transparency in the shadows are found wanting, the application of encaustic paste, or of a slight varnish, sufficient to give depth without gloss, will meet the difficulty, and aid in protecting, instead of assisting in the destruction of, the print.

IMPURITY IN SULPHOCYANIDE OF AMMONIUM.

AN interesting paper by Dr. Emmerson Reynolds was read at the last meeting of the Chemical Society, describing a series of experiments in the course of which he had been able to isolate *sulphur urea* as an impurity found in some samples of sulphocyanide of ammonium. We have heard occasional complaints of decided discolouration, like the effect of sulphur, in prints fixed by sulphocyanide of ammonium. At the last meeting of the British Association Mr. Spiller mentioned, at the termination of Dr. Phipson's paper, that he had met in some samples of sulphocyanide with a sulphur compound having a tendency to sulphurize photographic prints. In our own experience with sulphocyanides for fixing purposes, which has been tolerably extensive, we have never met with this defect, a circumstance, doubtless, traceable to the fact that we worked for years with one very pure sample, of which we had a very large supply.

If the sulphocyanides had taken that position in photography as fixing salts which was at one time hoped or anticipated, this discovery would have been a very important one to photographers. The idea, however, of fixing prints by this means has, unfortunately, had to be abandoned. The insolubility of sulphocyanide of silver in water stands as an insuperable barrier to the beneficial use of sulphocyanide of ammonia for fixing. When a silver salt comes into contact with hyposulphite of soda a double hyposulphite of silver and soda is formed, which is perfectly soluble in water, and can, therefore, by repeated washings, be removed from the print. When a silver salt comes into contact with sulphocyanide of ammonium a double-sulphocyanide of silver and ammonium is formed, which is soluble in a strong solution of sulphocyanide of ammonium, but not soluble in water. When a print which has been fixed with sulphocyanide of ammonium is placed in the washing water, the solution of sulphocyanide of silver and ammonium with which it is saturated is decomposed, sulphocyanide of ammonium remaining in solution, leaving insoluble sulphocyanide of silver in and on the film. By transferring the print to two or three fresh sulphocyanide baths in succession the quantity of sulphocyanide of silver in the print was reduced to a minimum; but a careful series of experiments, extending over some years, convinced us that the traces of the insoluble silver salt left in the paper would darken when exposed to strong sunlight. The isolation of sulphur urea by Dr. Reynolds, although more important as a chemical discovery than for its bearing on photographic practice, will interest many of our readers, especially those who employ sulphocyanides in toning operations.

This sulphur urea is formed in sulphocyanide of ammonium by submitting it to too high a temperature in the course of manufacture. Dr. Reynolds has separated it from impure samples of the sulphocyanide in fine crystals, either in the shape of long needles, or short, thick prisms; in either case belonging to the trimetric system. It is non-deliquescent in moderately dry air, is very soluble in water and alcohol, and sparingly so in ether. The solution froths slightly on agitation, has a neutral reaction, and somewhat bitter taste.

The sulphur urea, when present in a sample of sulphocyanide, will very readily sulphurize a silver print. Heated with oxide of silver in a little water, it forms sulphide of silver. Its presence in sulphocyanide may be easily tested. If a few drops of nitrate of silver solution are added to pure sulphocyanide of ammonium, the result will be, as we have before described, the formation of a white precipitate of sulphocyanide of silver, which, if there be sufficient excess of the sulphocyanide of ammonium, will redissolve; but no discolouration will take place. If, instead of using pure sulphocyanide, a sample be employed containing sulphur urea, the solution is quickly discoloured, and a precipitate of sulphide of silver is thrown down. A sample which will give this result, it is clear, will readily sulphurize silver prints, whether it be used for fixing or toning purposes. Care should be taken, in using the sulphocyanide for toning purposes, to test it for the presence of a body which readily parts with sulphur, and in any case it will be wise to avoid, when employing it, the use of very acid samples of chloride of gold.

We append Dr. Reynolds's description of the reactions between sulphur urea and gold and silver salts.

Gold Compound.—On treating a saturated aqueous solution of the urea with neutral terchloride of gold, a reddish precipitate appeared at first, which quickly redissolved, when a yellow colour appeared in the liquid; it was slowly evaporated, and yielded pearly monoclinic crystals, to which the author assigns the singular formula—

$$\left.\begin{array}{r}(CS)'' H_4 N_2 \\ (CS)'' H_4 N_2 \\ Cl\end{array}\right\} Au$$

When the gold solution was employed in excess a very unstable compound was produced, which appeared to differ from the former one in containing only 1 equivalent of the urea, and 2 of chlorine.

Silver Compound.—The action of nitrate of silver on the urea yielded silky crystals having the formula—

$$2[(CS)'' H_1 N_2]\ Ag_2O + 4H_2O.$$

This compound is decomposed by heat with slight explosion, sulphide of silver and a crystalline sublimate being formed.

When sulphur urea and hydrate of silver are heated with a little water for half-an-hour, sulphide of silver is formed, and the urea is converted into ordinary urea—

$$(CS)'' H_4 N_2 + Ag_2O = (CO)'' H_4 N_2 + Ag_2S.$$

It is, therefore, probable that in the little-known process for the preparation of carbamide by the action of oxide of silver on sulphocyanate of ammonium, there are really two stages—one in which sulphur urea is formed, and one in which it is converted into ordinary urea and sulphide of silver.

PERMANENCY IN CARBON AND SILVER PRINTS AND MODES OF TESTING.

There is a certain danger which arises now and then out of the anxiety of photographers to secure absolute certainty of the value of the claims to permanency put forward on behalf of prints by various processes. There is a constant danger, in making the examination, of the misapplication or misuse of tests, which necessarily leads to erroneous conclusions. We should not, in testing for the purity of gold, reject it because we found it was not as hard as steel, or impeach the durability of a fabric because it was consumed when placed in the fire. Neither ought we, in testing photographic prints, to submit them to injurious agencies to which, in their ordinary preservation as works of art, they are not likely to be exposed, and the action of which they ought not to be expected to resist.

All that should be expected of a photographic print, whether produced by silver printing or by some of the pigment printing processes, is, that the image shall be produced in a manner and formed of materials not likely to change in the course of time, either from causes within itself, or from such exterior causes as a picture might be legitimately subjected to. If a photograph, when kept in a portfolio, or framed and glazed for hanging on a wall, as an engraving would be, present as little change after the lapse of years as an engraving, it ought to be considered a permanent picture, and the result perfectly satisfactory. Destructive tests are, of course, out of the question. A photograph on glass may be broken; a print on paper may be torn or burnt; even an enamel may be crushed by a hammer, or melted in a sufficiently hot furnace; but these things do not affect permanency. Destructive tests, therefore, except where they anticipate by active means the probable gradual action of ordinary and natural agencies, cannot be legitimately used, nor can conclusive arguments ever be derived from the issue.

Again, in using legitimate tests, it is important, if honest conclusions are sought, that the legitimate examples of the process tested be employed. Carelessly or imperfectly treated prints by any process may fail when submitted to tests which are perfectly reasonable; but the failure is, in such case, merely a proof of imperfect treatment, not of imperfect process. In short, it is only necessary here to say, that the experimentalist should carefully avoid the illogical process of generalizing from narrow or insufficient premises.

We have been led to these remarks by a long letter received some weeks ago from an old correspondent, stated to be for our "careful consideration," and for publication if we thought the matter ought to be discussed, and discussed now, so as to raise the issue: "Have the various new permanent printing processes made good their claims, or have they been tried and found wanting?" As our correspondent's arguments are plausibly but moderately put, and probably represent a good deal of floating opinion, we shall make a full extract from his letter, and point out what we conceive to be fallacies in his positions. Passing over his introductory severe remarks, which we need not repeat, because they relate to persons with whom we can have no discussion, we commence with the practical part of his letter. He says:—

"Dismissing photographic and literary quackery, however, has not the time come to raise the issue: Have the various new permanent printing processes made good their claims, or have they been tried and found wanting? Has their superiority over silver printing been so marked and undoubted as to justify photographers in abandoning, or even contemplating the abandonment of, a process which has been steadily improving for a quarter of a century, and has attained a high degree of perfection, for any of the carbon processes which remain yet to be tested, and which, if my own slight experience and common report may be trusted, are not so absolutely steadfast under severe tests after all? And if this be so, where is the boasted certainty the new processes were to give us? Uncertainty has been said to be the fatal stigma of silver prints on albuminized paper. I quote from memory the terms of one of your own articles on the advantages of carbon. 'The bane of silver printing is,' you observed, 'not so much the certainty that its results will fade, as the uncertainty that they will remain permanent.' Has carbon, I ask, given us more certainty? And, if so, in which process?

"If I do not bore you, I should like to give you the results of my own experience in making these examinations. I will begin with Swan's process, which appears to have attained the highest degree of practical perfection, and may be said, I suppose, really to have entered the arena of commerce. I have heard something of Professor Taylor examining some carbon prints submitted to him, one of which was destroyed by soaking, and the other uninjured. I do not know anything of the particulars, and cannot therefore offer this fact as an argument; but the story recalls my own experience. More than a couple of years ago, one of Swan's prints came into my possession, which I wished to tint in water colours. I applied a wash of colour to the face, and before it was quite dry began to work a little more colour into parts. To my disgust the film began to work up, and the colour to take unevenly; and on further attempt to get a clean, even tint, blisters rose, and part of the film came away. On soaking the picture in water the film left the paper in shreds. I was told that the print had not been properly fixed; but I knew that already, for I had proved it. But I think that I had proved something more; I had proved that carbon prints were not all permanent.

"Recently, whilst thinking of these things, it occurred to me to test some of Mr. Woodbury's photo-relief prints, of which I had two or three specimens, which, I suppose, one may regard as carbon prints obtained mechanically. I had seen some discussion on them in the pages to which I have already alluded, but had not read it. I took the 'Killarney Girl' given with the News, some few years ago, and sponged the print thoroughly. To my delight it stood perfectly. I therefore tried further, using a print which I had lately acquired. On applying a wet sponge, half the background was wiped out! Again I am told the picture was unfixed; and again I say I am only too well assured of the fact. But I presume that the picture was not intended to be unfixed; and therefore I repeat that the much desired certainty has not been found here.

"There is another point which I may as well mention in this connection, as it weighs in my mind for something, and I know that it does so with many others. The two or three false starts in working this process commercially suggest the existence of practical difficulties. That at least two companies, who have heralded the process loudly, have come to grief before achieving anything, does not inspire confidence. Swan's process, as I said, seems fairly launched commercially, but how is it so few people are practising the process? Is it that the new company do not grant licenses, or that photographers are shy of obtaining them?

"There is another carbon process—I mean Pouncy's—which nobody seems to know much about. Four or five years ago you praised it highly, and I formed great hopes of it from what was then said. But how is it that it does not come before the public? There is surely some hitch, or a process patented five years ago would have come into use before now. I cannot learn that a single photographer has done anything with it, either for business or amusement. One does not see or hear of it at exhibitions; one does not hear of specimens being shown at photographic meetings, where it is common to show novelties. I went to the Crystal Palace to see the specimens you noticed favourably some months ago, which had been removed from the Paris exhibition; but they only remained at Sydenham a short time, and were gone before I got there. The last specimen I saw was on talc, and the image was cracking off the talc. Perhaps it would not be fair to say that this process has been tried and found wanting, because it scarcely seems to have been tried. I understood that the patent does not describe the process fully enough to enable any one to work it; that Mr. Pouncy keeps back some secret, in which case, I suppose, the patent is of no use. I have seen some assertion of the tendency of bitumen to crack, and so render the printing-ink photographs unstable. Is this so? I must confess, beyond the tale picture chipping away (not a good sign of permanency), I have no evidence of what may be expected. I saw a paragraph lately in a daily paper saying that these pictures would bear soaking for about a week, or boiling or baking for six hours. I did not see the advantage of this power to stand fire and water, inasmuch as I never heard of anyone who wanted to bake or boil photographs. Nevertheless, when I saw the paragraph, it occurred to me that I should like to apply a similar test to silver prints. I accordingly took a couple of card pictures and placed them in the kitchen oven at the heat usually employed for baking, and another couple, and placed them in the kitchen boiler, and I devoted an extra copy I had of the Woodbury print of the 'Killarney Girl,' and placed one-half in the oven, and the other in the boiler, and left them all for six hours. At the end of that time they were withdrawn. The boiled silver prints were scarcely altered at all; but, if anything, they were a shade browner, and a shade lighter. In the Woodbury print the image had disappeared altogether in boiling, leaving a piece of white paper. All the baked prints were quite unchanged. So much for the severity of the tests. I do not think anything the worse of Woodbury's prints because, being formed of gelatine rendered insoluble, it would not stand prolonged boiling, any more than I should think worse of a Pouncy print that it would not stand prolonged immersion in benzole.

"I have confined my remarks purely to the question of permanency, without entering on that of beauty. I might say, however, that none of the carbon processes surpass silver in beauty. Woodbury prints generally have a curious glazed effect, and with sunken whites and raised blacks, which is inartistic. I think that they would suit decorative work better than work of fine art proper. All Pouncy's prints I have seen have a vulgar varnish over them, which to me is intolerable. Swan's prints are, out of all proportion, the finest of the carbon pictures, and, on the score of beauty, nothing can be said against them. Some, with a dead instead of a glazed texture, are very beautiful.

"To conclude my long letter, which will, I am afraid, weary you—and, if you publish it, your readers—my position is, that silver prints, if properly printed, toned, fixed, and washed, are permanent, and fail only when some point is neglected; that the best that can be expected of carbon prints is permanency when every point of care is used in the operations, and they will fail like silver prints if these points are neglected. What, then, have we to gain by giving up silver and adopting carbon?—Very truly yours, Theta."

We will offer one or two brief comments on our correspondent's observations, and, as shortly as we can, answer his questions. We believe, and we have often repeated, that with proper care in producing and preserving silver prints they will have a very long tenure of permanency. It must not be forgotten, however, that, at best, an image formed of a finely-divided deposit of metal like silver, so subject to change from atmospheric causes, is less likely to be stable than one formed of a substance so durable as carbon. The cause of failure, too, in the carbon print to which he adverts is due to the gelatine with which the transfer is effected not having been made insoluble. The failure was not inherent in the process, but the result of a neglect on the part of the producer, and its possibility has been anticipated and provided for from the first. We may here, without being egotistical, quote a brief passage from our own work on Pigment Printing, written upwards of two years ago:—

> The only possible source of deterioration in the prints produced by the method we have described exists in the thin coating of gelatine with which the print is fixed to its final support. By means of moisture and friction the print might be removed; this, it is true, is destruction, not fading or instability in the usual sense. But it is, happily, possible to remove even this susceptibility to injury. * * * * * One of the means used by Mr. Swan to render the gelatine insoluble is quite novel, and constitutes one of the first applications of his discovery of the property possessed by salts of the sesquioxide of chromium of rendering gelatine insoluble.
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> A solution of common alum has, to a certain extent, the power of waterproofing the prints, and general fixture with alum is quite sufficient. Where, however, more thorough waterproofing is demanded, the prints, after transfer, should be treated with a one per cent. solution of chrome alum. Mr. Swan has shown us some prints very successfully transferred without a press. The transfer was effected with the gelatine solution ordinarily used, to which had been added one-twentieth of a ten per cent. solution of chrome alum. Prints intended for colouring in water colour should be chrome-fixed.

For prints which have to be treated with water colours, or submitted to moisture—or, indeed, for all prints—a method is provided of rendering them waterproof. Nevertheless, we submit that as prints are not usually kept in water, the capacity for remaining uninjured after soaking therein is not a necessary condition of permanency in a gelatino-carbon print, any more than it would be in a water colour drawing, or than, as our correspondent suggests, the capability of resisting prolonged soaking in benzole is a necessary condition of a photograph in printing-ink, or of an engraving, or an oil painting. We know nothing of the conditions of the trial referred to by our correspondent; but it is clear that to give such a trial any value it should not be made on chance prints, which may have been imperfectly or carelessly manipulated, but on such prints as the originator of each process should provide as fair examples, upon which he was willing to stake the reputation of the process. It may be replied, that such a plan would give opportunity for preparing prints with extra care. Precisely so: and when a process is being tested, such care is not only admissible, but imperative; otherwise a decision might be obtained implying faults in a process, which faults merely belonged to the carelessness of the person who worked the process.

The same answer applies to the Woodbury print: a process had been neglected, and the image remained soluble. It is much to be regretted that during the experimental days of both these processes examples got into circulation in which the final process of rendering insoluble had been neglected, subjecting them to much misjudgment. Into the question of the business delays in working the Woodbury process we cannot enter. They have been very unfortunate, and to no one more than the inventor; but it would be unfair, we think, to draw inferences prejudicial to the process from such facts. Neither can we enter into the question of the business arrangements of the Autotype Company: we believe that they are actively and successfully prosecuting their business, and that they have announced their readiness to grant licenses; to what extent such licenses have been taken, or to what extent the process is worked, we cannot at present say; but we believe that many licences have been taken, and, judging from the number of carbon prints in circulation, the process is clearly very extensively worked somewhere.

Any absolutely new process, no matter how perfect, must necessarily require a long time to supplant a process so simple, so effective, and so well established as silver printing. In regard to Pouncy's process we can give no information that we have not already published. With the exception of the examples exhibited last year in Paris, and subsequently in the Crystal Palace, we have not seen any of the prints for a long time. When we first described the process we saw valuable capabilities in it, and we have in nowise changed our opinion. Whether the specification fully describes the process, or whether some essential point is kept back, we do not know. If so, of course the patent would be invalid. We have never prepared tissue by it, but, using Mr. Pouncy's tissue, we have got very good results. Some progress has, we understand, been made in the process, but, as our correspondent remarks, neither information nor specimens have come much under the attention of the photographic world. We do not attach the slightest importance to the cracking properties of bitumen, in the small proportion in which it is present in carbon prints produced by it, nor doubt their permanency, any more than we fear the permanency of others owing to the alleged perishable nature of gelatine. The latter, when properly treated in carbon prints, is practically converted into leather. We believe that all carbon prints properly produced will be absolutely permanent.

Whilst we have always felt a deep interest in all carbon processes, we take no issue with our correspondent on the score of silver printing. Skilfully conducted, it gives very beautiful results, and, if proper care be used in preservation, as well as production of the prints, whilst they may lose some degree of freshness and beauty, they will not readily fade out of sight. Nevertheless, the reign of carbon will come: it may be many years first, it probably will be; but it is scarcely to be doubted that some good carbon process will prevail in the photography of the future.

OLEOGRAPHY; OR, AUTOGRAPAIC PICTURES OF COHESION FIGURES.

Some of our readers are familiar with what are termed "cohesion figures." A few years ago, Professor Tomlinson, one of the most shrewd and observant of modern physicists, called attention to the figures formed on the surface of water when various oils, ethers, &c., are dropped on the water and allowed to float there. He noticed that every oil had its specific figure, and that a simple means of detecting adulterations or mixtures was presented by the form of the "cohesion figure." The beauty of many of the forms assumed by the spreading oils is exceedingly remarkable, and it has often been matter of regret that they were necessarily so evanescent. A recent number of the *Chemical News* contains an article by Dr. Carter Moffat, in which, under the title of "Oleography," he describes a method of preserving these images by what may be termed an autographic process. An extract from his paper will interest our readers :—

> Those who have watched these exquisite shapes have often wished to secure them on paper as a kind of photograph,—to have them brought before the eye palpable and fixed, to be seen at once a reality, a permanent image. Many have tried to do so. For long I had attempted to do the same. In many things apparently difficult, yet simple, we are apt to think them insurmountable. It is in their very simplicity, however, that we fail to grasp the solution of the problem. The oil patterns, uninjured, can as readily be transferred from the surface of water, and permanently fixed to be placed in our albums, as we can pour water from one vessel to another. No matter what colours we desire, we can obtain them of any hue we please. They rival the most beautiful photographs. The faintest tracery is brought out with the most perfect fidelity. Two well-known photographers of this city, to whom I showed them this week, declared they were excellent photographs; and yet not a trace of the chemicals photographers use was employed. The process can be described in three lines:—Obtain the oil pattern, note the time, lay a piece of glazed surface paper on the pattern for an instant, take it off, place on the surface of a plate of ink for a moment, remove and wash off the excess of ink with water, and your pattern is there as it was on the water. You now have an exquisite representation in black, as fine as any photograph. A scarlet is obtained by employing a solution of cochineal or any of the scarlet coal-tar colours. We have them in orange, red, scarlet, black, blue, and other tints. A good result is got by first passing the paper containing the pattern of oil through ink, and then through cochineal. The principle of the matter is this: the paper absorbs the oil at the several parts to the exclusion of the water. The ink colours the water parts, but, at the same time, tints the oil parts very faintly, which gives it the appearance of relievo. Any kind of paper almost will do; tissue, green, glazed, white, &c., give pretty good results. The paper I employ, which I find to take up the most delicate parts, is what is known as white surface paper (glazed on one side only). We get it cut in circular pieces of about four inches in diameter. The pattern obtained is of this diameter. A larger pattern could readily be obtained by using a larger drop of oil and a larger size of paper. Mr. Lundy, of Leith, at the inaugural lecture of a course of lectures delivered there last Thursday, exhibited several books of patterns of different oils I sent him. Professor Woodward, of Birmingham, wrote me for some of these fixed representations, but as I did not receive his letter until the very day of the conversazione at Birmingham (owing to the note having been delayed), I was extremely sorry I could not send them in time. There are many applications that this method can be put to. We have been able to take perfect facsimiles of fern-leaves by coating them with oil, placing them on the glazed paper, pressing them against the paper, obtaining a perfect likeness of the fern, and showing it in relief by drawing the paper through ink, or cochineal, or other colour. In printing with oiled types on the paper and colouring afterwards, we have also been able to get beautiful results. I think that paper-stainers and paper-hanging manufacturers might be greatly benefited by paying attention to our method.
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> I confidently hope to be able to transfer the patterns even to cloth, to stone, &c.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

New-Year's Greetings—The Goddard Fund—Carbonate of Silver Paper—Photographic Book Illustration—New Poisons Act—Extensive Piracy Case—Societies.

With greetings and good wishes such as well befit the season An Old Photographer commences anew his monthly task on the eve of a new year, and hopes for each and all of the many friends he meets in these pages, but whom in the body he shall never see, the highest prosperity and the most unalloyed happiness during the next twelve months which they can possibly desire for themselves. Or, stay! This is not quite wisely done: let him wish them, rather, all the prosperity and happiness they can make good use of.

The echoes of the past year faintly mingle with the echoes of the past month, and tempt An Old Photographer to stray in his reminiscences beyond the somewhat dull month just closing. But in doing this he would, he fears, trench upon the Editor's annual résume, and must forbear.

One of the pleasant echoes which still vibrate are those of the last words on the "Goddard Relief Fund." I take the words as they stand from the first heading referring to the fund in your volume for 1863, and not from your last article. It must be a great relief to the committee to have got rid of an onerous and thankless responsibility, which brought much work, worry, and anxiety, and very little satisfaction of any kind. Stay! I believe I am wrong again. There is a satisfaction: that of discharging a duty, undertaken with a good aim, honestly and manfully when it ceased to be pleasant, and conscientiously remaining faithful to a trust imposed upon them by the subscribers in the face of obloquy and false imputation. That satisfaction—and it is the highest mortals can hope for—they must possess; and a second satisfaction, also, that of knowing that the subscribers—I believe without an exception worth naming—have entirely approved their action. Having finished so satisfactorily, then, I hope fervently that the *disagremens* and ingratitude attending that attempt will not be suffered to interfere in any way with the zeal of any one concerned in aiding in the formation of a general relief fund; and that before the next Christmas bells chime peace and good-will to all mankind, this fund, as one element of that good-will, may be amongst the established facts of the year.

Another printing facility to prolong the tenure of the silver processes. Paper prepared with carbonate of silver, I see, is announced in France, but the details are meagre as yet. I remember hearing Mr. Spiller describe an experiment of twelve years ago, in which carbonate of soda was employed as sensitizer or an accelerator in printing, and the experiment is suggestive. Paper was treated with nitrate of silver, then floated upon a solution of chloride of sodium, and finally washed. By this means, paper prepared with chloride of silver without any excess of free nitrate was produced. This, on exposure, was found to darken somewhat slowly and faintly; but on moistening it with a solution of carbonate of soda the blackening went on much more rapidly and vigorously. Is it possible that the sensitive albuminized papers sold ready for use are prepared upon an analogous principle, the excess of free nitrate after sensitizing, or the final traces after washing, perhaps, being converted into a carbonate?

Since the allusion in the News to the paucity of photographic book illustration this Christmas, I have taken some pains to note the announcements. The limited number of such books is certainly curious. With the exception of some good artistic books published by Bell and Daldy, one or two by Bennett, and the completion of Doré's illustrations to Tennyson's Idylls, I cannot hear of photographically-illustrated books being issued. It is, however, alleged in the publishing trade, that there is a general paucity of good Christmas books; so we may hope that it is not from any imperfection in photographic illustration that its adoption has been limited this year.

The new Act limiting the sale of poisons to the hands of registered pharmaceutical chemists now commences to take effect. The limitation will doubtless be productive of some inconvenience to photographers, and also to photographic dealers. It is a pity that the latter class did not make some attempt to get an exemption from its operation, similar to that secured for quack medicine vendors. That deadly poisons like corrosive sublimate and cyanide should be subject to special conditions in their sale, cannot be disputed; and it is to be hoped that the effect of stringent conditions in their sale may have some effect in securing more care in their storage and use. How few photographers carefully label such things! Use breeds indifference; familiarity breeds contempt; and indifference to, or contempt of, imminent risk, too often issues in fatal results. It is whispered in some quarters that the new Pharmacy Bill was devised less to secure public safety than to obtain a monopoly for the members of the Pharmaceutical Society, and that a certain class of general practitioners having a licence from the Apothecaries' Company to dispense medicines will now be debarred, unless they register in accordance with the provisions of the Act. These will be greater sufferers than photographic dealers,

Mr. Graves has pounced upon a somewhat prolific nest of pirates, and, it seems, has resolved to charge them with conspiracy as well as piracy. I do not know what additional penalty that may involve; but I am always glad to see those who so degrade a beautiful art brought to condign punishment. I do not like to see, however, foul means employed to effect fair purposes. I do not like to see an informer employed to worm himself into a man's confidence by offering to become a partner, solely for the purpose of making evidence against him. I am old-fashioned enough to believe in the force of an injunction in an old book which says we may not do evil that good may come. Mr. Graves has been very deeply wronged, and the provocation to put down piracy by all and every means is very great; but I wish that the means employed to remedy this wrong were such as could command the sympathy of everyone.

The Societies have been active and interesting. At *the* London Society a capital paper on photography in connection with the Abyssinian Expedition was read by Mr. H. Baden Pritchard, who paid a high tribute to the efficiency of Serjeant Harrold. Mr. Pritchard's account of the difficulties to be encountered, and the promptness and resource required in grappling with them, was very graphic and interesting. Considerable interest was excited also by the distribution of Mr. Robinson's charming picture, "Watching the Lark," which was universally admired. Mr. Spiller, the new Secretary, entered on the duties of which he will take formal and official charge in February next.

At the South London Society an hour was agreeably spent in the examination of various fine pictures brought by different members; and in examining Mr. Browning's new electric lamp, which is ingenious and convenient, but, as exhibited, did not yield a very powerful light. Mr. Fox exhibited a novelty in mounts which in many cases will be very effective. Mr. Sebastian Davis introduced a subject selected from the "Question-Box," in which the cause of pinholes in dry plates was sought. The discussion was interesting, but by no means exhaustive. Mr. Davis confined his observations to one or two phases of the subject which have generally been overlooked in dealing with the question, and made some important suggestions. The annual dinner of that Society, which followed a day or two after, was one of those rare successes which, by good luck, at times arise out of a happy combination of circumstances. Such annual social réunions are well worthy of the attention of other societies. At present, so far as I know, the Oldham Society is the only Society besides the South London which indulges in this pleasant institution, and I believe that whilst these Echoes are preparing for press the Oldham photographers are holding their annual festival.

At the North the proceedings were chiefly of a conversational character. Mr. Wm. Bedford exhibited some very fine plain paper prints taken on the back of albuminized paper, to illustrate the value of the suggestion recently made in the NEWS. The exhibition of these prints gave rise to a desultory conversation, just as the meeting was being adjourned, on the value of plain paper printing, a subject worthy of a fuller and more formal discussion.

The Amateur Photographic Society appears to be flourishing, from the interesting account of the number and excellence of the pictures contributed, and the large number of prizes awarded.

The Edinburgh Society had a paper of unusual excellence and value. The subject was art; a few of the leading principles of the art of drawing, most copiously illustrated by examples, having been brought before the members by Mr. Norman Macbeth, a portrait painter. Papers of this class are too rare in photographic societies.

The Liverpool Society, the Manchester Society, and some other societies, held interesting meetings, but the proceedings do not invite special notice.

PROPOSED RETURN TO THE USE OF PLAIN PAPER IN PRINTING.

BY A. DE CONSTANT.

It was with much pleasure that I read the remarks which were made at the meeting of the North London Photographic Association, held on the 4th December last, relative to the advantages possessed by the old process of printing upon salted paper. I myself have shared and expressed this opinion on many occasions, and the results I have obtained, after employing plain salted paper in the ordinary way of practice during a very considerable period, prove it to possess several advantages, even in the face of its great rival, albuminized paper; for, besides the promptness with which the paper is printed, and the facility with which it is toned, it moreover appears that the prints are endowed with good keeping qualities.

In the report of the proceedings of the first exhibition of the French Photographic Society (ten or twelve years ago), M. Figuier remarked my prints upon plain paper, and made special mention thereof, predicting for the same a long life. M. Figuier, I am happy to say, has turned out a good prophet, for these specimens are still in my possession, and as fresh as in the first days of their production, the whites having retained their pristine purity. The process I then employed is that with an ammoniacal silver bath, and paper simply salted, without any supplementary coating whatever. The difficulty attending this method was to find a suitable paper, for too often the material was unequally and imperfectly sized in the manufactory, and, according to the description of sizing used, whether starch or gelatine, so the tones of the pictures varied. Sometimes a yellowish brown tint was produced, which blackened only with great difficulty, or tones of a deep black were at once obtained before it was possible to stop the process, so as to obtain prints of a lighter tint. In general it was the stout papers which were the most suitable for the purpose. M. Leighton Pine more recently suggested the addition of a small quantity of gelatine to a dilute salt solution, and the employment of a neutral silver bath of 8 per cent. strength, followed by ammoniacal fumigation. This modification appeared to me an improvement, and I employed it for some time with success, the surface of the paper being rendered by its means more equal. But the addition of gelatine defiled the silver bath, and the aversion I entertain for the use of animal matter (gelatine, albumen, &c.) caused me to prefer a paper coated with arrowroot or some other material of that description, which may now be had of good quality in commerce. The employment of a weak sensitizing bath and the fumigation of the prints with ammonia vapour I still retained, finishing my prints by giving them a coating of varnish by means of a camel-hair brush.

In the production of the specimens exhibited by Mr. Bedford at the North London Society, the reversed side of albuminized paper had been used. This paper is well adapted to the purpose, from the fact that a good material is generally selected for albuminizing, and that the albuminous coating on the reverse side exerts a beneficial influence, as may easily be shown; nevertheless, I do not employ it myself, for when I have an enemy (and albumen is one to me) I do not care to have him present, even if his back is turned towards me. I likewise think that the encaustic paste—of which Mr. Bedford avails himself—would fulfil the same object as my varnish; and as I am, therefore, perfectly acquainted with the effects which may be obtained by these means, I am not at all astonished at the success and admiration which attended the exhibition of prints prepared in this manner by so skilful an operator as Mr. Bedford.

If anyone desires to know my method of proceeding with plain paper, it is simply as follows:—Choose a good stout arrowroot paper for the purpose (the firm of Liesegang and Co., of Elberfeld, will furnish a suitable material properly salted*); employ a neutral silver bath of 8 per cent. strength, and when the paper has been sensitized and well dried, subject it to the action of ammonia vapour for ten minutes or a quarter of an hour; print very deeply, and tone with an old alkaline gold bath somewhat weak, for it acts very rapidly, and the prints are easily overtoned; the hyposulphite solution may also be rather dilute, as the image, being upon the surface of the paper, is rapidly fixed. When the prints have been washed and dried, coat them with a tepid solution of gelatine of 7 or 8 per cent. strength, applied by means of a soft brush. Finally, varnish them with a very fine brush from which the hairs are not likely to become detached. The varnish which I have found most suitable for this operation is that of M. Sœhnee, of Paris, which I mix in the proportion of three parts of the positive varnish to one part of the negative. The last operation must be performed lightly and carefully, to prevent the formation of air-bubbles; it increases the brilliancy of the photograph, which may be modified at will, and contributes much to the permanence of the print. It is perfectly astonishing to how great an extent this process may be substituted for that of albumen, and how useful it is for producing prints of hard negatives, wrinkled faces, and landscapes with strong contrasts.

It may, perhaps, be urged, as an objection against the process, that the supplementary operations of gelatinizing and varnishing render the process a lengthened one; but what is it compared with the carbon process and other newly-invented methods, which promise permanency at the cost of many numerous and complicated manipulations?

Before concluding, I must acknowledge that I have said nothing herein which is new; but I shall be happy to see revived a process which has been sadly abandoned, and which produces very permanent prints with effects of the most artistic description in the hands of those who know how to appreciate and to work it properly; for without taking into consideration the great economy secured by the use of plain salted paper, the rapidity with which it is printed and facility with which it is toned must be considered qualities of no mean order.

Lausanne, 18*th December*, 1868.

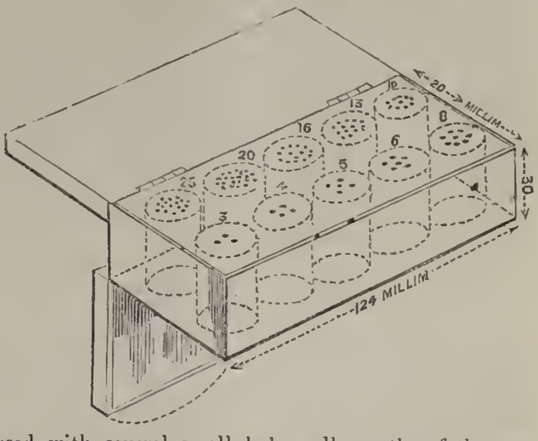
A NEW ACTINOMETER.

BY ARTHUR TAYLOR.

[We have been favoured by Mr. Arthur Taylor, of Marseilles, with the following description of a new actinometer he has designed, translated from the note he has supplied to M. Leon Vidal for his forthcoming work on the carbon process.—Ed.]

This instrument, being still in the experimental stage, the best way of arranging its constructive details is not yet definitely settled; nevertheless, the following description of the trial instrument used by the author in his last experiments will sufficiently explain the principle on which it is based.

In a rectangular block of wood, 108 millimetres in length, 58 wide, and 41 millimetres in thickness, eight holes, 20 millimetres (¾-inch) in diameter, are bored through the thickness of the block. These perforations are placed on two parallel lines, and each one is closed by a thin metallic diaphragm; the whole thus forming a group of cells, each of which is 40 millimetres in depth. The diaphragms are pierced with several small holes, all exactly of the same diameter, but the number of holes is different in each diaphragm. In the particular instrument now described, the diameter of these orifices is 2 millimetres. The first diaphragm has 3 orifices, the second 4, and the following ones 6, 8, 10, 13, 16, and 20 respectively.



If, whilst in this state, the instrument is placed with the open ends of the cells on a piece of sensitive paper, and the diaphragms exposed to diffused light, the sensitive surface under each diaphragm will be acted on by the light with an intensity proportional to the number of holes in the corresponding diaphragm, so that the paper will be impressed with two rows of circular spots, having the diameter of the cells, and presenting a graduated scale of tints.

It was no doubt to be supposed beforehand that the intensity of the action in each cell would be directly proportional to the number of the orifices in the diaphragm; and, consequently, that if, by exposure to a constant source of light during a given time, a certain degree of colouration was obtained, for example, under the diaphragm having twelve holes, double the time of exposure would be required under the diaphragm having only six holes, and three times the exposure under that having four holes; in other words, that, to produce the same degree of colouration under each cell, the time of exposure necessary multiplied by the number of orifices in the cell would give a constant number.

It was, however, necessary to establish the truth of the foregoing hypothesis by direct experiment. The few trials which have been made appear entirely to confirm the principle of the instrument. But before explaining the exact nature of these trials, it is desirable to add some details to the description already commenced.

One of the principal uses to which the actinometer will be applied being the measurement of the exposures necessary in carbon printing, and this being often carried on in direct sunlight, it was necessary that the instrument should give correct indications under these circumstances. Now, in the state to which our description has brought it, such would not be the case, for each cell being, in fact, a small camera-obscura, if the instrument were turned to the sun, each orifice in the diaphragms would project on to the paper occupying the field an image of the sun; and the same effect would be produced were the instrument turned towards any other luminous body. Consequently, the paper, instead of being impressed with a spot of an uniform tint under each cell, would be impressed with a confused image of exterior objects. This objection has been completely overcome by the use of a thin parallel plate of glass, very finely ground on both sides, and placed in front of the diaphragms. With this addition the tint of the spots is completely equalized.

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* The gum tragacanth paper, manufactured by Marion, also gives very superb tones.

To measure the intensity of the colouration, it is necessary to compare it either with a graduated scale of tints, or with one uniform and constant tint, forming a standard for all the observations.

This last method, having been judged preferable for many reasons, is the one which has been adopted. It is very conveniently applied in the following manner:—A card, having the dimensions of the proof paper used in the instrument, is coloured uniformly with one of the tints acquired by the sensitive paper through the progressive action of the light, and which we will call the standard tint. This card is pierced with a series of circular openings 8 millimetres (about ¼-inch) in diameter, the centres of which correspond with the axes of the cells, so that when this screen is placed on the paper proof, the openings in it correspond with the centres of the coloured spots on the proof. It is then easy to determine at a glance which of the impressions agrees most nearly in tint with the standard tint on the screen.

The tints can be still more conveniently compared when a yellow glass is placed over the screen: because, in the first place, the indications of the instrument can thus be read off in the open daylight; and also because the use of this yellow medium annuls any slight difference which may exist between the shade of the impressions and that of the screens, the yellow glass, in this latter case, replacing the monochromatic lamp used by Roscoe for a similar purpose. The yellow glass must be of a light colour, and the screen fixed to it with the coloured side inwards; or, what is still better, the glass itself is painted with the standard tint. A hinged board closes the lower ends of the cells, and it is between this board and the body of the instrument that the sensitive paper is placed, being fixed to the board by small pieces of soft wax.

To determine whether, in a constant light, the times necessary to produce the standard tint were strictly in the inverse ratio of the number of orifices in the diaphragms, a certain number of experiments were made in the direct sunlight in the month of July, at mid-day, and with a perfectly clear and cloudless sky. Under these conditions, each series of observations not lasting more than ten or fifteen minutes, the light may be considered as being constant, and the indications of the actinometer were found to agree very exactly with the law enunciated above. Experiments made with diffused light gave similar results. The author, however, intends making a new instrument on the same principle, but more complete, and made with greater care than the one above described, so as to determine, by a larger and more carefully conducted series of experiments, to what degree of approximation it is possible to carry this mode of measuring the chemical activity of light.

It would, doubtless, be possible to use single orifices of various diameters instead of varying numbers of orifices having equal diameters; but the latter mode of construction is preferable, as being more easily executed with the necessary exactness, and also because it annuls the error arising from the diffraction of the light by the edges of the orifices. When several equal orifices are used, the total diffraction produced by the edges increases in the same proportions as the total area of the orifices, which would not be the case with single orifices of varying diameters. The orifices are distributed as equally as possible in each diaphragm within a circle fifteen millimetres in diameter, so as to ensure the equable diffusion of the light; and to avoid reflected light, the interior of the cells is left rough and blackened. The diaphragms also are blacked. The diameter of the orifices, their number, and distance between the diaphram and the sensitive paper, are conditions which may be modified to suit the special purpose to which the instrument is to be applied. The rapidity of the action on the sensitive surface will, it is evident, vary approximatively in the inverse ratio of the square of the distance between it and the diaphragm. The author, indeed, commenced the construction of an actinometer on this last principle, composed of sliding and graduated tubes, carrying at one end a diaphragm with a single orifice, and at the other the sensitive surface, constituting, in fact, a small camera-obscura, having a graduated sliding body, and a simple hole instead of a lens. This plan has, however, been put on one side—for the present, at least—as being probably both less accurate and less convenient than the instrument which forms the principal object of this note.

The manner of using the actinometer as a guide in printing is extremely simple. A few trial prints are made from a negative, the actinometer being exposed at the same time and in the same condition as to light. On each print is noted, not the time of exposure, but merely the degree indicated by instrument—that is, the number of orifices in the diaphragm under which the sensitive paper has taken the standard tint (this number should be written near the corresponding opening of the screen). When the prints are developed, the number found noted on the best one is marked on the negative. This number is the degree that must be reached by the actinometer during the printing of that particular negative, of which it expresses the relative translucidity or diactinic power. To determine the degree proper to any given negative, it is necessary to employ an actinometer with several cells; but in subsequent printing operations it will suffice to expose together with the printing frame a little actinometer composed of one cell only, and having a diaphragm exactly similar to that which, in the standard instrument, corresponds to the degree of the negative or group of negatives to be printed.

Marseilles, September 18th, 1868.*

PERSPECTIVE IN RELATION TO PHOTOGRAPHY.

BY AN AMATEUR.

Having for some time taken great interest in the question of perspective in photography, I was very glad to see Mr. Cherrill's letter on the subject in your number of October 2, and I hoped that the subject would have been debated in a way that might have led to some satisfactory conclusion. Not finding that to be the case, I undertook a series of experiments, and a friend, who took the same view as I, was kind enough to give me valuable assistance.

We were quite aware that all our propositions are capable of simple mathematical proof; but we also knew that many persons are unable to follow such reasoning, and that others, while assenting to its correctness, dismiss it by saying, "It is all very well in theory, but it is not so in practice." If our propositions had not already been proved mathematically, we should have thought it necessary to use instruments of greater precision, and make many more experiments; as it was, we were satisfied with few experiments, showing a near approximation to the truth.

Experiment 1.—If two objects of equal height are placed in a vertical position, the one at double the distance of the other from the eye, the nearer object will appear of twice the height of the other; or, in other words, any object will cover another of double its height if the latter be at double the distance.

Experiment 2.—Let one of the objects of equal height be removed to three times the distance of the other, it will appear to be of one-third the height.

Corollary A.—The apparent size of any object, which is the angle it subtends at the eye, is in inverse proportion to its distance from the eye.

Experiments with a Plane Mirror hung Vertically against a Wall.

Experiment 3.—Take a foot rule and a strip of cardboard of exactly the same length, and fix the latter vertically against a mirror so as to touch it. Holding the rule vertically in the plane of the eye, place yourself at arm's length from the mirror. The reflection of the rule will appear to be of exactly half the length of that of the cardboard, or of the cardboard itself, which is the same thing. As long as the rule is kept vertical, and in the same plane as the eye, you may either approach or retire from the mirror, the reflection of the rule will always appear to be of exactly half the length of the cardboard.

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* It will be noted that this translation was prepared some months ago; but, as the publication of M. Vidal's work has been unexpectedly delayed, Mr. Taylor is unwilling to withhold the description longer from our readers.—Ed.

Experiment 4.—Fix some object, which should not be less than 3 feet long, in an exactly upright position at any given distance from a mirror, and retire till the eye is at exactly the same distance from the object as the object is from the mirror. The reflection of the object will appear to be one-third the height of the object itself.

Corollary B.—In Experiment 3 we saw that the apparent height of the reflection of the rule was half that of the cardboard. But, by corollary *A*, that is the height that the rule itself would appear if it were placed as far behind the cardboard (or mirror) as it is in front of it. In Experiment 4, as the distance of the object from the eye may be anything, let us, for purposes of calculation, call it n feet. It will also be n feet from the mirror. The apparent height of the reflection is one-third that of the object, or the same height as the object itself would appear if it were at $3n$ feet from the eye, or n feet behind the mirror. It is evident that if the mirror is vertical, but the objects inclined, or *vice versa*, the reflections will be foreshortened.

We are quite aware that to give a rigid experimental proof of our propositions would require an infinite number of experiments, but we considered that these were a sufficient illustration of their truth; and they may be easily confirmed by anyone who will take the trouble to measure the distances with accuracy, and to place all the objects exactly vertical.

Want of sufficient attention to these points seems to have led Dr. Anthony to an erroneous conclusion on a point which does not seem to have been subsequently referred to, and which, as he has drawn from it an analogous conclusion with regard to lenses, seems to require some notice.

We will discuss the question of the images formed by lenses presently; but in the meantime, knowing the laws which govern the apparent size of reflections, let us try to apply them to the instance before us. In his letter in your paper of October 9th, he says: "On a slip of glass gum some bars of paper at 2 inches apart; stand in front of a mirror (say at 20 feet off it), place the glass with the bars in the plane of your face, and the face and head will appear to fill five of the spaces between the bars; hold the glass 2 feet in front of you, and as you look through it at the reflection in the mirror you will find that your oval of head and face will only fill four of the spaces. Now, if you go forward to a distance of 4 feet from the mirror, and you place the barred glass in the plane of your face, you will find the oval fill the five spaces as before; and if you advance the barred glass 2 feet, as you did in the former experiment, you will find, as you did before, that face and head will fill only the four spaces, so that the exaggeration of perspective would seem to be equal for all distances."

When Dr. Anthony says, "Your oval of head and face only fill four spaces," he clearly means the reflection of the oval, but it is not equally clear whether he means four spaces of the glass itself, or of its reflection. Let us, therefore, test the correctness of this experiment on each supposition.

Supposing, first, that we have to compare the glass itself with the reflection of the face in the mirror. The eye is at a distance of 2 feet from the glass, and of 20 feet from the mirror; the reflection of the face will, therefore, appear to be at 40 feet from the eye, or twenty times as far as the glass, so that instead of four spaces of glass being required to cover the reflection of your face, only a quarter of one would be needed. I conclude, therefore, that Dr. Anthony intended that the reflection of the glass should be compared with that of the face. In this case the reflection of the face will appear, as before, of the same size as if it were 40 feet distant, but that of the glass will appear to be at twice 18 feet (its distance from the mirror), plus 2 feet, its distance from the eye, or 38 feet. That is to say, that the reflection of the glass being called 20, that of the face would be 19, not 20 and 16, or 5 and 4, as Dr. Anthony noted them.

Let us examine in the same way his second experiment. The face being at 4 feet and the glass at 2 feet from the mirror, the reflection of the former will appear to be at 8 feet and that of the latter at 6 feet from the eye; and their proportionate sizes 3 and 4: a very different proportion from 19 and 20, and not agreeing either with Dr. Anthony's observation, which was again 4 and 5.

I therefore conclude that he is in error in stating that what he calls "the exaggeration of perspective" is the same for all distances, and that his further conclusions, applied by analogy to lenses, are not proved.

(*To be continued.*)

Correspondence.

PHOTOGRAPHER'S RELIEF FUND.

My Dear Sir,—As the question of a Photographer's Relief Fund is now at issue, and discussion is invited upon the subject, I beg leave to say a few words. No one will doubt that a fund for the benefit or reward of the destitute or meritorious amongst photographers would be a great boon, and the question naturally arises, that in case such a fund should be obtained: Who ought to be the proper persons to benefit by it, and by what process their eligibility is to be tested? I see various opinions have been offered. For my part, I can see no better or fairer tests than those of the possession of a practical knowledge of our art, joined to a satisfactory proof that it has been followed as a profession. The submitting to and passing such an examination ought surely to be convincing to the most cautious. As regards any other sources of the income of such a person we have nothing to do, provided that photography has been the staple, and not merely the plaything or addition. I should be sorry to consider any one the worse photographer who, finding that his returns were decreasing from unfair competition, or any other cause, seeks to maintain an honest and respectable position by employing his otherwise useless leisure and capital in other directions. This is not the person who would willingly seek relief from any fund, and only in case of unforeseen and dire distress. I hardly think that your readers would, from such a cause, consider him disqualified for the reception of their benevolence. Amongst a very large connection of the profession, I hardly know of one photographer who practises the art *per se*, and believe that in every case they have other dealings, more or less, besides photography.

Although I should ever regret that any word of mine should appear antagonistic to so good a purpose, still I think that the title Relief Fund smacks a little of the workhouse. "A rose by any other name may smell as sweet." So it may; but I should rather see our art and its professors increasing in dignity in the world's estimation than the other way. Could not the same object be obtained in a more legitimate manner? About four years since I laid before your readers the idea of a photographic college, or society, on a similar plan to that of the Pharmaceutical, the eligibility of members to be tested by examination, and diplomas granted, a scale of fees to be charged, and a moderate annual subscription required; the surplus fund, after paying expenses, to be employed in charitable and other purposes, under the control of a council. I think it would have been better for the art and its professors had some such society then been formed. Why not do it at once? The kind of assistance already given and promised would be available, and need not be perverted from its intended application. As there must be some test of eligibility, the difference will mainly consist in the society being made a permanant institution, having a far greater and more widely-extended power for good than charitable contributions alone can afford, which cannot be depended upon with certainty, and that, in many cases, cannot be repeated

A few years since a chemist and druggist was only reckoned as a sort of grocer, and was, indeed, little other, many of them being men of slight education, knowing only the routine of the counter, and little or nothing of the chemical properties of the articles they sold. The institution of the Pharmaceutical Society has changed all that, and their title has now become recognized by law, as much so as that of a surgeon or physician. As to be a good photographer requires as great a chemical knowledge as the profession of a druggist, and more than two-thirds of them possess, why should the professors of photography submit to rank lower in the social scale, seeing that they are of necessity and in reality the more scientific? Examinations and diplomas would soon alter this, and the art and its professors take their proper station.

Were I to enumerate one-half the benefits such a society would confer morally and commercially upon its members, I should require a much greater space than can be afforded to this subject. Suffice it to say, that its influence with the public would be great, and upon its members almost unbounded. The worthy and meritorious would be rewarded, and evil-doers held up to scorn; prices, in a measure, might be governed, piracy abolished, assistants would be held worthy of their hire, and be able to command better wages (as is already the case with the chemists); needy members would claim assistance without loss of self-respect. The institution would be permanent, and, in time, self-supporting.

I ask, then, my brother professionals to consider and decide whether, on the one hand, they will make an effort to prove their self-reliance and independence by uniting in one powerful brotherhood for the good of all, or whether they will still remain in their disjointed condition as at present, with the prospect, at no distant date, of their profession becoming extinct, leaving their aged and decayed members to the cold mercy of charity.

The only machinery needed to set so desirable a scheme afloat is, that some few of our leading men should form themselves into a provisional committee, issue a prospectus in the journals, and call upon the profession to join their ranks. As has been the case in other societies, no examination need be enforced upon recognised members of the profession, and, for a time, only very modified ones from other aspirants.

I beg your readers to understand that I have no wish to dogmatise, and only offer these suggestions to them in hopes that some better men will take up the subject and carry it to a successful issue. I regret to see our beautiful art and its professors in their present anomalous condition, and should be much gratified could I in any way assist in improving it. JAMES MARTIN.

114, *High Street, Ilfracombe.*

OPERATION OF THE CARBON PATENT.

SIR,—I find in your YEAR-BOOK OF PHOTOGRAPHY, just published, a description of a simplified process of carbon printing, by Mr. Blair, of Perth. In the process described, Mr. Blair only uses one transfer, and in a recent notice of his works you spoke very highly of prints which he produced without any transfer at all. Nearly twelve months ago, I believe, Dr. Vogel also described in your pages a process by single transfer. All these are steps in the right direction, but a rather serious doubt clouds my individual satisfaction in regard to them. I see that the Autotype Company, which holds Mr. Swan's patent, announces its intention of proceeding against all persons who by pretended simplifications infringe that patent.

Will you, sir, be so good as inform the photographic world whether the simplifications to which I have referred constitute infringements of Mr. Swan's patent, and whether the method of obtaining carbon prints produced by a single transfer process is included in that patent. If it be a fact that such a patent can cover all possible simplifications or improvements, there is not much inducement to further experiment in carbon printing for any one, since the result would be claimed by the owners of that patent. And, further, is it not most unreasonable that Mr. Swan should have been able to secure such a patent, and so blocked up the way to further improvement? Surely the patent does not bar the practice of what was known before Mr. Swan obtained a patent.—Your obliged servant, A CARBON AMATEUR.

[The extent of the ground covered by Mr. Swan's patent is rather a question for a patent lawyer than for our decision; but we can give a little information which may, perhaps, assist you in arriving at a decision yourself. First, we may suggest that a careful study of the specification will give you the fullest information as to the claims of the patentee. Referring to the specification in relation to single transfer processes, we find the first claim made is for the preparation of a tissue which permits exposure on one side and washing away on the other. After specifying this claim in detail, the next claim is made for modes of using such a tissue. One of these modes runs as follows:—"I cement it [the exposed tissue], with the exposed or photographically-impressed surface downwards, upon the surface upon which it is to remain permanently attached;" and further it proceeds to say, that in so cementing the tissue to the paper on which it is to remain permanently, "I prefer to use albumen or starch-paste as the cementing medium; and where I employ albumen I coagulate or render it insoluble in water." From this it would appear that Mr. Swan includes the single transfer process in his patent. Next, as to blocking up the way, and the question of experiment to improve the carbon process, let us say one word. The way is no more blocked now than it was before the existence of the patent. All the carbon processes, and all the knowledge which concerned carbon printing, which existed and were unprotected or unmonopolized before Mr. Swan's patent, remain public property still. Mr. Swan's patent simply gives him a property in that which he originated, and nothing more, and that cannot be unfair. Neither is the way in any measure blocked up now for further improvement. Any new method you can originate is open to you; only you cannot use, without his permission (or that of his representatives), the method he originated. Further, let us counsel our correspondent not to be unjust, but to remember that prior to the publication of Mr. Swan's method a process of carbon printing with half-tones, sufficiently simple and practical to be used commercially, was unknown. Now, thanks to Mr. Swan, it is so familiar a thing that we are apt to forget that it is a boon which, a few years ago, would have been regarded as almost beyond price.—ED.]

COCKLING OF LARGE PRINTS IN PRINTING FRAME.

DEAR SIR,—Will you allow me to say a little upon this subject, if you think the "little" worthy of being added to the "mickle." Mr. Rejlander suggests in your last issue that the packing of the pressure frame be warmed before it is put into it. I cannot find that this is a certain remedy, and it has this great disadvantage, that every print that has had warm packing placed at the back of it (in my hands) has turned out weak and flat, and nothing to be compared to prints printed with packing at the same temperature. I tumbled the other day upon what I *know* to be a remedy, as I have never had a cockled print since; it is this: after the sensitized paper has been placed upon the negative, put the packing on as usual, but leave the board or back of the frame off for about two or three minutes, placing it on one side until negatives, paper, and packing are of one temperature; after this the pressure may be put on without fear of cockling. I hardly need say that the packing is pressure sufficient to keep the sensitized paper in contact with the negative, without being so much as to prevent the paper from shrinking as it cools.

I daresay this is what everybody knows, and I should certainly not have troubled you with it but for Mr. Rejlander's letter.—I remain, sir, yours truly,

Huntingdon, January 5th, 1869. H. R. SHERBORN.

Proceedings of Societies.

AMERICAN NATIONAL PHOTOGRAPHIC CONVENTION.

THE first session of the American National Photographic Convention was opened at Philadelphia on the 1st ult., and continued on the 2nd, under the presidency of Mr. Bogardus.

A report of the action of the Convention in opposing the extension of the bromide patent was read and adopted.

A series of articles of association determining the conditions of membership and the precise scope of the Association were then discussed and decided upon, details of which we shall probably give on another occasion when we have space. The officers were then elected:—

President—A. Bogardus.

Vice-Presidents—John A. Whipple, Boston; S. Holmes, New York; W. L. Germore, Philadelphia; H. Pollock, Baltimore; D. H. Anderson, Richmond; L. T. Blessing, New Orleans; Robert Benecke, St. Louis; A. Hesler, Chicago; E. Decker, Cleveland; J. E. Whitney, St. Paul; J. J. Bardwell, Detroit; E. T. Whitnoy, Norcalk; G. S. Cook, Charlestown; B. Carr, Concord; Mr. Nichols, San Francisco; Luther N. Choeseman, Trenton; C. R. Savage, Salt Lake City; J. Hardy, Bangor; E. Garrett, Wilmington; N. S. Howo, Brattleboro'.

Permanent Secretary—E. L. Wilson.

Treasurer—H. T. Anthony.

Various committees and sub-committees were then elected.

The following gentlemen were then proposed and elected as honorary members:—

Dr. C. M. Cresson, Prof. Morse, Prof. Draper, L. M. Rutherford, Prof. Rood, Prof Tillman, Prof. Oliver Wendoll Holmes, Dr. Vogel, Dr. P. E. Liesegang, Herr Schrank, Prof. Doremus, G. Wharton Simpson, M.A., W. Notman, J. Inglis, T. Gaffield, Dr. T. P. Shepherd, Prof. Hamilton Smith, Prof. Towler, Prof. Henry Morton, Dr. Carey Lea, and Mr. Joseph Dixon.

A warm vote of thanks to Mr. E. L. Wilson for his valuable and energetic action in resisting the extension of the bromide patent was passed, and a committee appointed to consider how their sense of his services could be most suitably recognized.

After a suitable response from Mr. Wilson, and some other business, the proceedings terminated.

OLDHAM PHOTOGRAPHIC SOCIETY.

THE annual meeting of the above Society was held at the "Hare and Hounds" Inn, Yorkshire Street, on Thursday, the 24th December; the President, Mr. J. GREEN, in the chair.

After the minutes of the previous meetings had been read and confirmed, the Secretary then read the

Annual Report.

The Council, on presenting their report for the past year, can congratulate the Society on its prosperity, though they cannot but regret that the papers have not been so large as could have been desired.

The position of the Society in a financial point of view is sound; the Art Union having contributed to this result. An out-door meeting has been held at Lymm, the weather, for the most part, being unfavourable, and the members of the black art rather meagre, but the attendance of the fair sex large. Through the kindness of some of the leading photographers, the Society now possess some of the finest carte photographs of the day. This year the Society have been able to have a presentation print, which has given great satisfaction to the members. The Council deeply regret the loss of two of their members within a very short time of each other, who have, ever since the commencement, taken an active part in the establishment of this Society.

In conclusion, your Council would again urge the importance of reading papers, and introducing novelties and subjects for discussion at the monthly meetings.

On Thursday, December 31st, the members held their annual dinner and *soirée* at the Cemetery Inn, Middleton Road, when thirty of the members sat down to dinner, after which about one hundred of the members' friends and their wives and sweethearts assembled to witness a comical extravaganza, entitled, "Blue Beard," performed by some of the members, which gave general satisfaction. Great credit is due to the performers for the elegant taste shown in getting up the burlesque, and style in providing the dresses. The room was most beautifully decorated with banners and mottoes appropriate for the occasion. The remainder of the evening was spent in dancing, &c. The *soirée* of the Oldham Photographic Society will, no doubt, long be remembered by many.

A vote of thanks to the Chairman and the host brought the proceedings to a close at a late hour.

Talk in the Studio.

PHOTO-RELIEF PRINTING.—The new company for working Mr. Woodbury's process is now fairly at work, and, we hope, with more certainty of stability in its operations than heretofore. Through no fault of the process it has been singularly unfortunate in its commercial introduction to the world hitherto, but we have reason to hope that no hitch of the kind will now interrupt its steady progress. The works at Brompton are in operation, and the company is, we understand, ready to undertake commissions in all sizes up to 10 by 8, and to any extent. Mr. Woodbury continues to improve the process in matters of detail. We hope to lay some interesting particulars on the subject before our readers shortly.

THE PHOTOGRAPHER'S REMINDER.—Mr. Cussons, of Southport, has issued a little brochure, entitled the "Photographer's Almanac and Reminder," which will be found very useful for the waistcoat pocket, and may be obtained, we believe, on application.

NEW USE FOR A PHOTOGRAPH.—A Madrid letter in the *Independance Belge* speaks of a present sent by some unknown "friend" a few days ago to General Prim, as is customary on the approach of a new year. It consisted of a handsome casket, highly ornamented, enveloped in silk, with a small silver key. When opened it was found to contain a miniature gibbet and a guillotine, with a photographic portrait of Prim between them, and the inscription, "The one or the other." A similar new-year's gift is said to have been sent the same day to General Serrano.

ANOTHER USE FOR A PHOTOGRAPH.—A Staffordshire paper states that a few days ago a respectable working-man, whilst inspecting the portraits in the window of Mr. Tilley, of Nowcastle-under-Lyne, recognised one as the likeness of a brother, who was bandsman in the 16th regiment, stationed at Barbadoes, in the West Indies. This man had sent communications to his brother, who knew his address, without formally stating that address, and when the bandsmen died the authorities did not know who to inform of the decease. The Stafford brother having sent his likeness with Mr. Tilley's address on the back, the expedient was adopted of sending the portrait of the deceased to the photographer to expose it, and if any relative should enquire, to inform him of his death. This commission Mr. Tilley executed in a feeling manner when the brother made the inquiry.

MODIFICATION OF THE METHOD OF ASSAYING SILVER COMPOUNDS IN THE WET WAY, BY M. STAS.—The mode of testing in the wet way in order to fix the standard of silver substances, as established by Gay-Lussac, is open, under certain conditions, to a source of error, arising from the solubility of chloride of silver in the very liquid to which its origin is due. This solution, whatever its mode of production may be, is precipitated equally by a decimal solution of silver and by chlorhydric acid. The extent to which this precipitation ensues is uncertain. At the ordinary temperature there may be a variation of from one to six thousandths in 100 c. c. of the liquid. Practically it is quite possible, while still preserving the simplicity of the wet method, as invented by Gay-Lussac, to substitute a bromide for a chloride in precipitating silver, and thus remove absolutely those anomalies which have been observed to be attendant upon the use of a chloride or of chlorhydric acid.—*Comptes Rendus.*

To Correspondents.

AMATEUR.—Much depends on the purpose of the india-rubber solution as to what is the best solvent. Bisulphide of carbon is an excellent solvent, but the solution is only suitable for rough purposes. Coal-tar naphtha is a good solvent, but unless the sample be highly rectified it has, like the former, an offensive smell, and the layer of india-rubber it leaves is somewhat tacky and unsuitable for preliminary coatings. Some samples of benzole dissolve india-rubber well, and some only imperfectly.

Chloroform is perhaps the best solvent; but it evaporates very quickly, and is expensive. Of course methylated chloroform may be used. You will find some interesting information on this subject, contributed by Mr. Keene, in our new Year-Book.

R. F. L.—In dealing with the subject of pinholes in dry plates Mr. Davis only treated of some of the causes. His purpose was not to write an exhaustive paper on the subject, but to introduce it for discussion by some special observations of his own, which were admirably to the purpose, and some of them distinctly new. He omitted the reference to the most common and obvious cause of pinholes, the supersaturation of the bath with iodide of silver, probably because it has been so extensively discussed, and is so familiar to most intelligent photographers. The nonsense in the letter to which you refer is not worth notice. We give no attention to anonymous abuse. The writer evidently has neither knowledge nor understanding of the subject. Dogmatism and ignorance generally accompany each other. All scientific authority states, and all practical experience proves, that the stronger the nitrate solution, the larger the proportion of the iodine of salt it will hold in solution. Of course, the more concentrated any solution is, the more readily crystallization will take place in it; and the stronger the nitrate bath, the more readily will crystals of iodo-nitrate of silver form in it, *provided it be sufficiently surcharged with iodide of silver;* but in proportion as it is strong it will hold iodide of silver in perfect solution without the formation of crystals. Crystals of iodo-nitrate of silver rarely form in a weak bath, because water decomposes such crystals into nitrate of silver and iodide of silver, and the weaker the bath the more similar is its action to water alone; that is, the more tendency it has to decompose iodo-nitrate of silver, and precipitate iodide of silver. Crystals of iodo-nitrate of silver may be formed in a weak bath if alcohol be freely added, simply because alcohol does not decompose iodo-nitrate of silver as water does. The letter-writer you mention clearly has had a hazy and imperfect knowledge of some of these facts without any understanding of their *rationale.*

Rot-tot-Toit.—Salaries in photography vary very considerably in different establishments. About 30s. a week is perhaps an average salary for a printer. There are not many lady printers employed, and we believe they are paid less, but cannot state the average salary they receive. From fifteen shillings to a guinea a week is an average salary for ladies employed in other branches of photography, in which they are more frequently engaged.

H. Hansen.—The lens you mention is probably the most suitable in existence for the purposes you require. It is not, of course, as rapid as an ordinary portrait lens; but it is the most rapid of any of the lenses suitable for the general work you require. It will give straight lines. For many purposes where rapidity is important it may be worked with full aperture. Properly stopped down, it will produce well such a landscape as you mention.

J. C.—The markings you describe often proceed from the use of an old bath with a large accumulation of impurities. If permanganate of potash or cyanide do not remove the defect, try boiling down the bath, previous rendering it alkaline. A precipitate of organic salts of silver will probably be formed; after which dilute the solution to its proper strength, and try again. Sunning, which is a most efficient remedy, is, unfortunately, of little avail in this dull weather. The fact that cyanide and permanganate each effected a temporary improvement suggests that the bath, and not the collodion, is the cause of the defect.

Oxoniensis.—The lens you mention produces very good work, but is somewhat slow, and does not give absolutely straight lines in architectural work. If you meet with one cheap, it may be worth while purchasing it; but if it be necessary to purchase one new, we should scarcely advise it. It has been superseded since its introduction by other lenses by the same maker and by other makers. We cannot with propriety mention names here; but if you will send a list we will indicate by the letter attached which we think will best answer your purpose. We are glad you like the Year-Book.

3rd January.—Of course a copying camera with two lenses can be used in producing Eburneum pictures. Mr. Burgess produces four on one plate with one lens and a repeating back. 2. The streaks or stains in the negative are apparently caused by an interruption in the flow of the developer; probably from insufficient alcohol in the developer; possibly from careless manipulation.

Yendis.—We do not know of any agent for the Obernetter paper in London. Try Mr. Hughes, 379, Oxford Street.

Citric Acid.—It is difficult to give you a satisfactory answer to the question whether thirty-five seconds is an average exposure at this season of the year without knowing many more particulars. For instance, you do not state the lens or aperture employed, and other particulars affecting the question. The fact that you have reduced the exposure ten seconds by removing the obscuring from the glass, as we recommended, gives you an important improvement. 2. As a rule, we use the simple sulphate of iron; the strength would vary with circumstances. For winter use, especially with a slow light, about 30 grains of proto-sulphate and 20 minims of acetic acid to an ounce of water. 3. We have not noticed the yellow spots you mention. See article on sulphocyanide of ammonium on another page. 4. You cannot do better than try Mr. Bovey's toning bath as stated in our last Volume and in our new Year-Book. 5. The collodion you name is very excellent. 6. You do not state whether the spots are transparent or opaque. State more particulars, and we shall have pleasure in helping you.

B. M.—Many of the facts of photo-chemistry are not to be found in text-books of chemistry; it is therefore difficult at times to consult high chemical authorities on such subjects. On the solubility of iodo-nitrate of silver you may, however, consult recent and good authority. In Storer's Dictionary of Solubilities, he says of it, that "its only solvent appears to be a concentrated solution of nitrate of silver." See answer to "R. F. L." above.

Lens.—We cannot speak with certainty, not having made comparative trials of the two lenses you mention. If the lens of shorter focus will work with as wide an aperture as the other, it will, of course, be more rapid; but, so far as we believe, the lens marked B requires to be worked with a small stop. That marked A may be worked with full aperture. If B can also be worked with full aperture—which its maker can doubtless tell you—then we should think it will answer your purpose best. For enlarging purposes we have no doubt that it will answer well.

C. G.—The work of Geymet and Alker on enamelling is published in Paris, and in French, of course. The price we do not know certainly, but believe that it is about 7s. 6d. It can be ordered through a foreign bookseller. 2. Oxide of silver is prepared by adding caustic potash to a solution of nitrate of silver. This will throw down a brown precipitate, which is oxide of silver; wash it to remove excess of potash, and then add it to the bath. It will answer well for neutralizing nitric acid in the bath.

An Amateur (Cheltenham).—The brown colour assumed by the bath on sunning suggests that some organic impurity is present. Continued exposure to light will doubtless restore it. Permanganate of potash employed as described in our Year-Book will also restore it, and may be employed without risk.

G. Emberson.—See answer to "C. G." above.

Photographer.—We regret that we cannot give you any certain information on the point you mention, as the suitability of various places for establishing photographic businesses does not in any way come under our attention. Our general impression is, in the present state of photographic business, that London is very full, if not overstocked. Stamps duly received.

William Sturgeon.—See answer to "C. G." There are two or three methods of enamelling patented in this country, which, of course, cannot be practised without the permission of the patentees; but other methods remain open.

W. S. Spots.—The stains on your print are clearly caused by something having fallen upon it, probably an acid; chloride of lime might possibly cause a similar result. But the spots are certainly due to some such cause, and not to any defect in the operations.

F. H.—It is somewhat difficult to trace with certainty the cause of the spots, the more so that they are clearly of two distinct kinds. Two of those on the shoulder of the figure are, we think, due to iron spots in the paper; whilst two others appear more like spots of sulphide of silver.

Amateur.—The statement has probably been based on information in private correspondence, as we know that the gentlemen do correspond. We will, however, make enquiry. 2. We cannot with certainty say whether the water so prepared could with safety be used for dry-plate work. As the final product of the decompositions effected, a trace of nitrates of ammonia of lime and, possibly, of some other base, would probably remain, and how these might act with the various preservatives which might be used can not be stated certainly without experiment. It is possible, also, that all the nitrate of silver might not be entirely reduced. Possibly, however, such water might be used with impunity for dry plates if a very minute trace of silver were added, and care taken that the whole were reduced by light before use.

C. H. Free.—The case, particulars of which you forward, strongly illustrates the desirability of establishing a general relief fund. If you prepare a brief statement of the case as an appeal, it shall appear in our advertising pages without charge.

Carbonate of Silver Paper.—In the notice in our last of the new printing paper prepared with carbonate of silver, in the instructions given for fuming, the use of carbonate of potash is mentioned. This, as most readers will see, is a clerical error. Carbonate of ammonia was intended.

David Duncan.—Received. Thanks.

N. K. Cherrill—Received. Thanks. We will write soon.

Articles by Dr. Vogel, Mr. S. Thompson, and others, together with some reviews, are again compelled to stand over until our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 541.—*January* 15, 1869.

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COMBINATION PRINTING.

Mr. Cherrill's paper on combination printing, read before the Photographic Society on Tuesday evening last, was one of the most interesting of the many valuable papers brought before the members for some time past, and it was rendered more interesting still, and tenfold more useful, by the examples of pictures in various stages of the operation of combined printing, and the charming finished results, which were shown.

Nearly eleven years have elapsed since Mr. Rejlander first introduced the subject of combination printing to the same society, and Mr. Cherrill's exhibition of the first studies, and the earliest sketch made for producing the "Two Ways of Life," and the first combination photograph ever produced, added especial interest to the proceedings of Tuesday night. The presence of Mr. Rejlander to defend the right of the photographer to prove the plasticity of his art by attempting composition, one of the highest aims in all art, and attempting it in the same manner as the painter must always effect his compositions—by depicting the different parts in succession, instead of at one operation on one plate—was not the least qualifying feature of the evening.

The time when it was necessary to apologize for or defend combination printing practically belongs to the past. Its legitimacy is generally recognized by all whose opinion is of any weight, objectors being few and unimportant. As Mr. Cherrill observes, it seems a self-evident proposition that if you cannot take a picture at once you must do it at twice; ordinary photographic appliances, being too limited in their range of power, demand extra effort and application on the part of the photographer. His sword being too short, he must add a step to it: and the possibility of double or combination printing enables him to supplement the limited pictorial powers which photography in its simplest form possesses. Mr. Rejlander has often graphically told the story of how, with him, necessity was the mother of invention. He found that his lens would not do the justice he, as an artist, required, to two figures at the same time; and the idea occurred to him to take them separately, and print them in succession on the same paper. In principle, what could be simpler or more legitimate?

Nevertheless, there is much wisdom in Mr. Cherrill's quaint advice, not only to hide the joins in printing, but, having hidden them, to forget them, and certainly not to point them out. "Critics," he says, "are so exceedingly clever that they can always detect a join when they know beforehand where it exists." We have even known would-be critics who could detect them where they did not exist. In one notorious case one of this class discovered four points of sight in a group of figures in a combined picture. He fancied the group in question was produced by four different exposures, and hence he was able to detect the four different points of sight. The real truth was, that all the figures in question were produced at one operation, with one lens, on one plate. This case was, of course, an unusually gross one, and the critic singularly incompetent and undiscriminating; but such a case aptly illustrates the character of much of the criticism which has been applied to combination printing.

One especial point of interest in Mr. Cherrill's paper was the explanation given of the exceedingly efficient and simple system of registration by which accuracy of junction and rapidity in the operations have been so admirably secured. Mr. Robinson states that so perfectly and simply does this system of registration work for all combined printing within modern dimensions, and for subjects not requiring more than two or three negatives, that he found it much easier to print in this way a separate background from a landscape than to adopt any of the ingenious projects discussed during last year for the production of portraits with natural backgrounds, brought into vogue by Mr. Edge.

ANOTHER PHOTO-MECHANICAL PRINTING PROCESS.

Photovitrotype or Photohyalotype.

We have before us an example of a new mechanical printing process of very rare beauty and perfection, and, so far as we can judge at present, altogether unlike anything else of the kind we have seen. The gradation of half-tone is perfect, and without any apparent trace whatever of grain,* and there is an entire absence of glaze or any indication of the use of a semi-transparent ink. The print, which is a card portrait of a lady in light drapery, resembles in all respects a fine silver print on plain paper. It is good in colour, fine in gradation, and neither lacks delicacy nor vigour.

At present the information on the subject is very meagre. The process is the invention of Herr Albert, of Munich, and, for obvious reasons, the secret of the process is at present maintained. Our first information on the subject was obtained in a private letter from Dr. Vogel some weeks ago, who described the results in very enthusiastic terms. The pictures were produced, he said, in printing-ink by a process analogous to photo-lithography, and it was termed "Photovitrotypy." We have since then received the example we have described, from Dr. Liesegang, who states that 1,300 impressions have been taken from one plate. The print is described on the back as a "Photohyalotype," by Albert, of Munich. Mr. Woodbury also recently mentioned to us that he had seen an example, and was led to believe that the process was analogous to that of M. Tessie du Motay, but so modified as to avoid all appearance of grain.

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* Under a strong magnifying power a delicate grain may be detected but is so fine that it becomes doubtful whether it is an intentional grain or merely that produced from the texture of the plain paper

Certain it is that in the example before us we can find no grain resembling lithography. The prints by Tessie du Motay's process undoubtedly do possess a grain, although a very fine one; and the plate, so far from producing 1,300 prints, would not, we believe, produce a twentieth part of that number of good impressions. The two names applied, which are somewhat analogous in their signification, suggest little beyond the probability of a glass plate being used. We are in communication with Herr Albert, and hope shortly to lay some definite information on the subject before our readers.

Half-a-dozen years ago the possibility of producing impressions with perfect photographic half-tone by means of mechanical printing appeared as chimerical as the possibility of discovering a practical process of producing photographs in natural colours. Since then, Mr. Woodbury's process, which effects the end perfectly, has been discovered, and now we have Herr Albert's method. We hail both with great satisfaction; there is ample use for both, and for still more; and, we believe, a prosperous and profitable opening for all.

MR. GORDON ON WASHING GUM PLATES.

In washing dry plates the consideration which has generally received attention has been the effective removal of free nitrate of silver. In the letter which we subjoin it will be seen that Mr. Russell Manners Gordon points out the extent to which sensitiveness depends upon the removal by washing of all the iodide or bromide not converted into a silver salt. The action of a free alkaline iodide or bromide in rendering iodide of silver insensitive is well known; but the possibility of securing such an action by leaving a portion of the iodides and bromides in the collodion unconverted into iodide and bromide of silver, and so producing a retarding action, has not so generally been considered by dry-plate workers as its importance demands. We subjoin Mr. Gordon's letter, and an extract from the letter of a correspondent to which it is an answer. The enquiry runs as follows:—

"Sir,—In the article on dry plate processes by M. de Constant in the News for January 1st, it is stated that Mr. Gordon 'washes the plates three times in distilled water, then allows them to remain at least one hour in ordinary water, previously to rinsing them again in distilled water and applying the preservative coatings.'

I am a very careful reader of the News, and I think I may say, without fear of contradiction, that Mr. Gordon has never (either in the News or Year-Book) stated anything of the kind; but as he may have done so to M. de Constant, I shall be glad if you can inform me whether this *hour's soaking* is a part of Mr. Gordon's system or not."

Mr. Gordon's reply to our query on the subject is as follows:—

"My Dear Sir,—I think your correspondent will find very great latitude admissible in the washing of gum plates.

"I have hitherto used three dipping baths of distilled water and a wash under the tap of about a minute before applying the preservative.

"I have, however, made a good many experiments in this direction, ranging between ten minutes and as many hours, and find that to obtain the *maximum* of sensibility (I say maximum, for excellent results may be produced by the use of ordinary bromo-iodized collodion in the usual way) the collodion should contain not less than 3 grains bromide to the ounce, that the plates be excited for ten or fifteen minutes in the 40-grain bath, and washed, or rather soaked, for several hours in water.

A short dip in the bath will necessitate a long washing, as a prolonged stay in the nitrate solution less washing; in fact, it is only necessary to bear in mind Major Russell's excellent theory, so true in practice—that the presence in the film of a little bromide is necessary to check fog, and that insensibility is caused by too much unconverted salt—to so regulate things as to secure great certainty in the preparation of *all* dry plates.

"I have lately had a rack made in ebonite on the model of one shown me by Major Russell, which I expect to find most convenient. It is open at top and bottom, and carries the plates in grooves; they can therefore be washed altogether, or left to soak any time and in a comparatively small quantity of water, which is an advantage if distilled water be used through.

"My rack works inside a dipping bath, and carries eight plates, which is about as many as I care to prepare at a time.

"I think any one wishing to meet with success should not grudge the time bestowed on the preparation of half-a-dozen experimental plates on which to try the result of a long or short washing; it is so very difficult for one man to legislate for another on this subject—so much depends on the collodion, &c.—every one should test these things for himself, and act accordingly.—Believe me to be yours faithfully, "R. Manners Gordon.

"*11th January.*"

MODES OF PLAIN PAPER PRINTING.

Hennah's Process.

Amongst the difficulties which have been alleged as standing in the way of plain paper printing are the want of good samples of plain paper, and the want of processes by which plain paper prints can be produced equal in richness and transparency to albuminized prints. Both these difficulties have undoubtedly, to some extent, a real existence; but it is very doubtful indeed whether any photographer has made a systematic attempt to work out old plain paper processes in the light of the increased knowledge and with the aid of the improved appliances of the present day.

Take Hennah's plain paper process, for instance. Eight or ten years ago impressions by this process were regarded as the *ne plus ultra* of photographic printing: the purity of the whites, with a play of delicate half-tones giving a pearly effect; the rich deep velvety quality of the blacks, as far from the blue or grey-black of some plain paper prints as from the dull brown of others; the combination of delicacy, modelling, and force, and, added to these qualities, the plain, quiet, matt-surface of the paper, free from the obtrusive and vulgar glare of albuminized prints, and closely resembling the texture of a mezzotint engraving—all these qualities were at one time the subject of general admiration, and a knowledge of the secret by which such results were produced was coveted by all. So far as the prevalence of testimony goes, there is every reason to believe that these prints were permanent. We have heard of many of these remaining perfect for a dozen years, and we have met with none which have faded. About four years ago this much-desired method of printing was courteously given in detail to the members of the Photographic Society by Mr. Hennah, who had originated the process by careful experiment. We question very much, however, whether half-a-dozen persons have tried it. When it was published the card mania was in the full tide of its popularity, and albuminized paper was a necessity for card pictures.

If any of our readers are disposed to respond to our appeal for a new trial of plain paper, there are elements in Mr. Hennah's process which well deserve attention. The process as detailed by Mr. Hennah is not necessarily difficult or complicated. It requires, however, special appliances, and would probably involve the necessity of the photographer preparing his paper himself, as the salted paper would not keep long.

The Paper should, of course, be as good as can be obtained, but the exact quality does not appear to be of imperative importance; Turner's and Towgood's English papers are described as best: but both Saxe and Rive papers may be employed.

The Salting Solution presents the first essential deviation from ordinary practice, inasmuch as a salt of gold is employed, as first suggested by Professor Maconochie in the Society's Journal in 1853. The salting solution stands as follows:—

Chloride of gold...	60 grains
Chloride of ammonium... ...	120 ,,
Water	20 ounces.

This is applied by floating in the ordinary manner, and the paper is to be allowed to remain from half a minute to two minutes, depending on circumstances. It is then dried rather quickly, but not perfectly, as it is better that it should be slightly damp when submitted to the exciting solution. In this state the paper will keep about twelve hours in the dark; but the influence of light or time discolours the paper by reducing the gold.

This paper is excited in a 60-grain ammonia-nitrate bath made as follows: 1,200 grains of nitrate of silver are dissolved in 15 ounces of water, and then converting it into an ammonia-nitrate by the careful addition of strong ammonia, until the precipitate first formed on its addition is just re-dissolved. The quantity is then made up to 20 ounces by adding more water. If the ammonia be in excess, the proofs will be grey and weak; if, on the contrary, it be deficient, the proofs will be bronzed and hard. The paper is floated from a minute and a half to three minutes, as circumstances demand; and then is thoroughly and quickly dried by hanging it before a fire or in a warm room.

It may be interesting here to glance for a moment at the reactions which take place. In the processes in common use, in which chlorides of ammonium, sodium, &c., are employed in salting the paper, the decompositions are simple enough, and are commonly well understood. The chloride of—say—ammonium decomposes the nitrate of silver solution, forming chloride of silver and nitrate of ammonia, the latter being neutral, or comparatively so, in the subsequent operations. But when a paper salted with chloride of gold is brought into contact with the nitrate of silver solution, the reactions are somewhat different. Chloride of silver is, of course, formed; but nitric acid, instead of combining with the gold, is set at liberty, or rather combines with the ammonia in the bath. Nitrate of gold is a salt not easily formed; and the gold left by the chlorine, instead of forming a nitrate, is oxidized, and the auric oxide remains in the paper in a state very ready to be reduced. Hence the short keeping qualities of the paper. When exposed under the negative, the oxide of gold is reduced simultaneously with the chloride of silver, and the print is already toned when it leaves the pressure frame, and only requires fixing. The colour of the print before fixing is something of an olive black tint.

Up to this point we can commend Mr. Hennah's process as simple and philosophical, but at the next stage we meet not only with complexity and empiricism, but with risk. The fixing bath is a strange mixture, and if it had any virtue at all in producing the rich colour of the print, such colour could only be due, we think, to the action of sulphur. We quote from Mr. Hennah's paper just as it stands:—

> The fixing solution is as follows:—To 20 ounces of water add 5 ounces of hyposulphite of soda and 14 grains of iodide of silver; then, when the solution is complete, add 1 ounce of the 60-grain ammonio-nitrate of silver solution.
>
> This mixture is fit for use immediately, but improves after a few proofs have been fixed in it. It should not at any time be thrown away, all that is required being to fill up the vessel containing it with fresh solution every day after use. It will be found that the quantity absorbed by the proofs allows of sufficient renewal to keep the solution in working order. It should smell strongly of ammonia, and if, from being out of use, the ammonia should have evaporated, a small quantity should be added. In ordinary use the proofs themselves sufficiently compensate for the evaporation.
>
> After exposure the proofs must be immersed without washing in the fixing solution, and are to be allowed to remain one hour; they are then to be taken out, drained, and laid in a single layer in a flat dish, when boiling water must be poured upon them; a fresh layer of proofs is laid upon them, and is then treated in the same way; and so on with the rest, giving boiling water to all. In about five minutes the water is to be drained off, and a fresh supply of boiling water added. It is as well to repeat this a third time—in fact, it is almost necessary.
>
> The washing can afterwards be completed by successive washings in boiling water, or in the ordinary way with cold water.
>
> The proofs, in consequence of the complete removal of the size, are very tender, and are best dried by hanging over glass rods.
>
> When dry, they are to be laid face downwards on glazed bibulous paper, and then ironed with an iron hot enough almost to scorch the paper.
>
> The proofs will now by their colour indicate any errors of the process which can affect their permanency, except that of sufficient washing.

Mr. Hennah attaches great importance to the addition of the iodide of silver and ammonio-nitrate of silver, and it is probable that notwithstanding the preservation of an alkaline condition, a slightly increased colouring power, due to sulphur, was produced by the addition; but to intending experimentalists we should commend the trial of a fixing bath of fresh plain hyposulphite of soda, trusting to the reduced gold for the colour of the print.

It is due to Mr. Hennah to remark, that when he read his paper he anticipated any doubt of the permanency of the prints arising from the bath he had described, by saying that a careful examination of the dark portions of a print, and the practical test of ten years, had satisfied him that the prints produced were at least as stable as those obtained by any other process. One important test of the probable permanence in each print was obtained in the process of finishing. The repeated hot-water washings had the effect of developing or rendering apparent the effect of sulphur actions by turning the whites of the prints yellow, and if any trace of this discolouration were manifest the print was instantly rejected; but when the print passed through the repeated changes of hot water retaining its perfect purity of colour, it was not unreasonably assumed that with fair subsequent treatment its permanency might be relied upon.

In this process, notwithstanding the beauty of the prints, it will be observed that no especial preparation is made for keeping the image on the surface, nor is any organic addition made to the salting solution. In another article we shall refer to the various modes which have been employed for increasing vigour and preserving the image on the surface of plain paper.

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DR. HOLMES' STEREOSCOPE.

Some months ago Mr. Blanchard exhibited at the South London Society a new form of stereoscope, which, in many respects, possessed advantages over every other form which he had seen. The instrument was of American invention, and Mr. Blanchard had pressed it for months past upon the attention of more than one manufacturer of photographic apparatus without making much impression upon them, or inducing them to commence its manufacture. Nevertheless, he was himself so convinced of its value that he believed the introduction of such an instrument to the public would have the effect of reviving the taste for stereoscopic pictures, which for the last few years had been steadily flagging.

At the Photographic Society's Exhibition in Conduit Street the instrument was, however, introduced to the public by Mr. Meagher, who exhibited several of them very handsomely made. As we understand that Mr. Meagher is now prepared to supply them to the public, a few words on the subject may have more interest than they could have when the instrument was inaccessible. This stereoscope is without question the most convenient and thoroughly pleasant to use of any which has been presented to the public. In the ordinary forms of stereoscope considerable ingenuity has been expended to construct a clumsy, heavy arrangement, to secure the least efficiency at the most cost. To begin with, it is a consideration of vital importance, in examining a stereoscopic slide, that it should have plenty of light upon it. In the ordinary box-stereoscope this is skilfully provided against, care being taken that light shall only reach the slide through one aperture, which shall be difficult to present towards the light when the instrument is used by lamp-light—the most common time for such examination. As the focus of the eye differs very much in different persons, a ready facility of varying the distance of the slide from the lenses is important; and therefore a large number of stereoscopes are made without any adjustment for varying the focus at all; and others permit of adjustment not exceeding an inch, when a range of 4 or 5 inches is at times necessary. One of the essential conditions of pleasant vision in a stereoscope consists in the perfect shading of the eyes from all light except that which is reflected from the slide itself; and such a shade is provided very rarely indeed in the ordinary instruments. We might go on pointing out the studied inconvenience which seems to distinguish the old instruments, but it is unnecessary. Suffice it to say, that almost every possible inconvenience has been eliminated from the stereoscope which Mr. Blanchard brought before the South London Society and Mr. Meagher has now introduced to the English public. It is pre-eminently efficient and convenient in use, and it is light, simple, and cheap. As the slide is open to light all round, there is no difficulty on that score: and no risk of half the picture being kept in shadow by the sides of the box. It possesses a simple sliding adjustment giving a range of focus of from 5 to 10 inches. The importance of this is easily illustrated. For our own most convenient use the slide is required close up, to bring it within the 5-inch focus, whilst many of our friends require it at a distance of 8 or 9 inches. A shade fitting to the forehead and nose completely excludes light from the eyes, except that coming from the slide and passing through the lens. This shade renders the instrument just as suitable for transparencies as for paper slides. A convenient handle is attached, or, in some cases, the instrument is affixed to a stand with all desirable adjustments. One before us is of polished walnut, and forms a handsome addition to a drawing-room table; made in plain mahogany, less ornamental but equally efficient, we believe this is the cheapest stereoscope which can be obtained.

It will give this instrument a considerably increased interest in the eyes of most readers when we state that it is the invention of Dr. Oliver Wendell Holmes, whose works take a high position in the first rank of American literature, and whom we feel proud to recognize as a fellow-labourer in photographic progress. The last number of the *Philadelphia Photographer* gives some amusing facts in the history of this instrument. Mr. Blanchard, in introducing it to the South London meeting, was somewhat severe on the disposition prevalent in this country to run in grooves, and the lack of enterprise in failing to appreciate or undertake improvements. It is not a little amusing to find that amongst our ingenious and enterprising American cousins, Dr. Holmes had just the same difficulties to combat which Mr. Blanchard reprehended as essentially belonging to his own countrymen.

Although this instrument has so recently come under attention in this country, it appears that it was invented by Dr. Holmes seven or eight years ago, and referred to in an admirable article on "Sun Painting and Sun Sculpture," published in 1851.* We append here a few paragraphs from the recent article in our Philadelphia contemporary.

> This simple stereoscope was not constructed by accident, but was the carrying out of a plan to reduce the instrument to its simplest terms. Two lenses were necessary, and a frame to hold them. I procured two of the best quality, and cut a square frame for them out of a solid piece of wood. A strip of wood at right angles to this was required to hold the pictures. I shaped one, narrow in the middle, broad at both ends—at one end to support the lenses, at the other to hold the stereographs, which were inserted in slots cut with a saw at different distances. A partition was necessary, which I made short, but wedge-shaped, widening as it receded from the eye. A handle was indispensable, and I made a small bradawl answer the purpose, taking care that it was placed so far back as to give the proper balance to the instrument—a point which bungling imitators have often overlooked. A hood for the eyes was needed for comfort, at least, and I fitted one, cut out of pasteboard, to my own forehead. This primeval machine, parent of the multitudes I see all around me, is in my left hand as I write, and I have just tried it and found it excellent.
>
> I felt sure this was decidedly better than the boxes commonly sold—that it was far easier to manage, especially with regard to light, and could be made much cheaper than the old-fashioned contrivances. I believed that it would add much to the comfort and pleasure of the lover of stereoscopic pictures. I believed, also, that money could be made out of it; but, considering it as a quasi-scientific improvement, I wished no pecuniary profit from it, and refused to make any arrangement by which I should be a gainer. All I asked was, to give it to somebody who would manufacture it for sale to the public.
>
> There did not seem to be much chance of anybody's making a fortune by it, at first, certainly. I showed it to one or two dealers in Boston, offering them the right to make all they could by manufacturing the pattern, asking nothing—not even one for my own use. They looked at the homely mechanism as a bachelor looks on the basket left at his door with an unendorsed infant crying in it.
>
> "No prophet is accepted in his own country," I said, with pious resignation. "Let us try our very good friends, the noted opticians of Chestnut Street, Philadelphia." So, on my next visit to that city, I showed my pattern there, and offered it freely and without price; but they looked at it as if they were bachelors too, and this was the twin of the other baby on their doorstep.
>
> I had received many polite attentions from members of a great photographic house in Broadway, New York, and as I was returning through that city I thought it would only be fair to offer them a chance to repeople the world with my improved breed of stereoscopes. Nothing could be more polite than the way in which they treated me, but I might as well have offered my stereoscope to an undertaker for a smile of welcome as to these great dealers, generous and excellent people as they are.
>
> Not far from their establishment was another of some pretensions, at which I made one last trial. On entering the salesroom, I saw a young gentleman smoking a cigar with such evident enjoyment that I felt quite ashamed of myself for interrupting him on a mere matter of business. I bought a picture or two of him, however, and then brought out my stereoscope and began, in a modest way, to explain its advantages and its commercial possibilities. It was to a young Briton I found that I was addressing myself, and my answer was somewhat to this effect:—
>
> "Beg your pawdon?—Aw—Yes. Quite so. They send us out everything new from London—last dodges—and all that sort of thing, you know." Of course I ought to have remembered that in London they know all that wo wretched provincials know, and ever so much more. So I left him over his cigar and his last London importations, which had, of course, all the possible improvements which the wit of man can devise.

Finally, Mr. Joseph Bates, who had made one for Dr. Holmes, commenced the manufacture, and the instrument has graduully been superseding all others in America, as it probably will in this country. Dr. Holmes and Mr. Bates have made various improvements at times, of which the public have had the advantage. In the recent article, Dr. Holmes refers to another improvement, permitting the reflection of a Claude Lorraine light on to the slide. We hope to learn more of this improvement, which we shall, in due time, describe to our readers.

CALOTYPE PROCESS.

BY A. G. GREENLAW (COLONEL, INDIAN STAFF CORPS).*

In none of the many works on photography have I been able to discover a very easy and sure mode of obtaining good calotype pictures. As practised by myself, it is so simple, at the same time so good in hot climates, that I give it to you in full.

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* See Photographic News, Vol. V., page 365.

* We learn from Col. Greenlaw that the following method of working the calotype process, which could not be surpassed for simplicity, is found perfectly efficient in the climate of India, where photographic difficulties are much greater than they are in this country. We had hoped to try the process before publication, so as to have been able to express an opinion in regard to it; but the long prevalence of unphotographic weather has rendered a fair trial impossible, and we delay it until the spring is a little advanced. The 18 by 16 pictures of Col. Greenlaw, by this process, took he first prize at a recent Madras exhibition.—Ed.

First examine your thin negative paper (I use Canson Freres) by holding each sheet so that the surface reflects the light to the eye. This will enable you to identify the side with the water-mark: the picture is taken on the opposite side. Place a mark in each corner on the wrong side; a letter is better than a cross or other mark, as these show the same mark on either side, while a letter becomes inverted. Now hold up the sheet that the light may shine through the paper, and reject all that show any irregularities, holes, patches of unequal density, &c. This process corrects greatly metallic spots. Having a sufficient number of perfect sheets, proceed to

Iodize.—Make a solution of—

Iodide of potassium	1,000 grains
Bromide of potassium ...	300 „

(For much foliage the latter may be increased to 450 grains)

Distilled water	40 ounces

and add enough of pure iodine to give the solution a dark claret colour. Then filter.

This will keep any time, and may be used to the last drop, but keeping it to the dark colour by adding iodine. For forests and trees the above is first-rate. Into this place as many sheets of paper as you can do easily, being careful that no air-bubbles exist; this can be avoided by floating the first sheet, and gently pushing the sheets, one by one, under it. When all are in, cover the first sheet with the liquid. Be sure that your tray is perfectly clean before you use it. Allow the papers so immersed to rest for one hour; then turn the whole upside down, and hang the sheets up to dry, taking off the last drops with white blotting-paper. This may be done in diffused light. When dry, place sheet over sheet evenly in a portfolio in which no other papers, except blotting-paper, are placed. They are then iodized a dark purple, which will keep any time. They, however, turn a light brown colour. Be sure, in working, that nothing touches the paper, for the very slightest touch is sure to cause a stain in the development.

Sensitizing.—Make your working room perfectly dark, using only a yellow light. Clean your dish well with a solution of—

Cyanide of potassium	1 scruple
Water	1 pint

and label the bottle in large letters "*Poison*"; rinse with water; and, lastly, pour over it distilled water. Into your thus cleaned dish put your sensitizing solution—

Nitrate of silver	2½ ounces
Glacial acetic acid	2½ „
Distilled water	40 „

This was for pictures 18 by 16.

The above will keep in the dark until used up, only needing to add occasionally 15 grains of nitrate of silver, or add solution made in above proportions. Filter always before using it, and test that you have an excess of acetic acid. Now float a sheet of your iodized paper on this (smooth side downwards) until the purple has turned an uniform yellow, which is iodide of silver. Allow it to rest for one minute; after this, remove and immerse in distilled water, where it should remain for two or three minutes; if to be kept for some time, removed to another dish of distilled water. Place now on clean white blotting-paper, face upward, and remove by blotting-paper *all* moisture from the surface (these sheets can be again used for ironing out the wax by-and-by); then place between blotting-paper, or hang up to dry; when *quite* dry, place in your dark slides.

Open your slide first, and spare no pains in cleaning the glass with *distilled* water, then with blotting-paper, and lastly rub thoroughly with papier Joseph. Take into your dark room; put in your paper, yellow side downwards; close your sliding back, draw up the shutter, and clean the front of your glass with a silk pocket-handkerchief; if a double slide, put two sheets of red blotting-paper between your prepared sheets.

Exposure.—I generally expose from five to ten minutes with a 10 by 8 camera; should I take more paper than I have slides for, I place a yellow bag over my tripod, and under that remove my paper into a portfolio, and place other prepared sheets in the slides. It makes a good tent.

Development.—Make, before you start to expose, the following developing solution :—

Gallic acid	200 grains
Spirit of camphor	1 drachm
Distilled water	40 ounces

This is a saturated solution of gallic acid; it soon decomposes; the spirit of camphor is added to preserve it. When about to develop, filter, and add to every 5 ounces 1 drachm of the following solution :—

Nitrate of silver	30 grains
Glacial acetic acid	¾ drachm
Distilled water	1 ounce

Pour into your dish quickly, and *immediately* float the picture side of your paper, which is slightly visible, on it, being very careful that there be sufficient liquid to prevent the paper touching the bottom of the dish. Constantly watch it until the picture becomes visible on the back, and the paper has a kind of brown greasy appearance. Continue the development until, in holding up a corner when the sky is before the light, you cannot see your finger when moved about between the light and the paper. If it is not dark enough before the gallate of silver decomposes, you have under-exposed. Decomposed gallate of silver ceases to develop.

Do not, when examining your paper, lift more than the corner, as an oxide of gallate of silver forms *rapidly* on the surface like a crust, and on replacing your picture it causes innumerable marble appearances; so also if you do not place your paper speedily on the solution in the first instance. It may be removed by drawing a sheet of blotting-paper over the surface of the solution. Remove to a dish of common water, and wash out the brown tinge caused by more or less decomposed gallate of silver. When *well* washed you may

Fix it by placing it in a solution of hyposulphite soda, 1½ ounce to 1 pint of water. You now remove it to diffused light till every vestige of the yellow iodide of silver be removed, after which wash in eight or ten different changes of water; you have then a fine clear and dense negative. To render it sufficiently transparent for printing you must proceed to

Wax it. This is done as follows :—Place it, when dry, face downwards on clean blotting-paper; *upon* it put a sheet of blotting-paper, and pass a moderate hot iron over it; this is to secure the picture being *perfectly* dry before waxing. Now remove the *upper* blotting-paper, and pass the iron over the picture, following the iron with a piece of white wax until the whole picture is saturated; do each picture thus. If travelling, you may wax all your sheets together like a block, with a piece of clean blotting-paper waxed to the top, and another to the bottom. To print from it you need to remove all the wax you possibly can by placing a sheet of old used blotting-paper and passing a hot iron over it, and repeating it till not a vestige of wax appears on the blotting-paper (use red, as it shows the wax spots better than the white). The negative is now finished, and will keep indefinitely in a portfolio, but with the greatest care not to bend it or allow any wind to do so, for if bent, the wax surface would be injured, and show a mark in the printing that is irreparable. Print and tone as usual.

I have used this process for years in India, and find it most simple. I obtained the first prize for my pictures so taken at an exhibition in India. With cleanliness it is certain.

PERSPECTIVE IN RELATION TO PHOTOGRAPHY.

BY AN AMATEUR.*

Experiments with Lenses.

To avoid all error from distortion of the image, the "triplet" and "rectilinear wide angle," both landscape lenses, were employed; the back focus of the former being 7 inches, and that of the latter 4⅝. In the following experiments, as we did not know the position of the "optical centre" of the lens, we took our measurements from the actual centre; but with that exception, whenever the centre of the lens is spoken of, the optical centre is always meant. It is the point at which a single lens of the same focal length as the combination must be placed to bring the rays of light to a focus at the same place as the other. The French metre of 39·371 inches was taken as the unit of length. The image on the ground glass was measured by means of callipers fitted with a "vernier," and capable of registering a difference of 1-20,000th of a metre, or 1-500th of an inch, but it is not pretended that the experiments were made with a corresponding degree of accuracy. Two objects were used, each of them of the height of 1·875 metres.

Experiments with the Triplet Lens.

	Distance of centre of lens from object in metres.	Size of image on ground glass in metres.
Experiment 5 ...	3·23	·1304
Experiment 6 ...	6·46	·0651

Wide Angle Rectilinear Lens.

Experiment 7 ...	3·23	·08875
Experiment 8 ...	6·46	·04385
Experiment 9 ...	1·615	·16975
Experiment 10...	4·845	·05655

The experiments 5, 6, 7, and 8 were made from the same spot, without moving the camera; consequently, as the objects were both precisely vertical, a slight inclination of the camera would foreshorten their images a little, without altering their proportion to each other; but as it was moved before experiments 9 and 10 were made, if in the one case it were more nearly level than the other, a comparison of experiments 7 and 9 might be expected to give a result less accurate than the other experiments, and this we shall find was the case.

Let us now compare the size of the images of the same sized object at various distances from the lens.

In 6 we have the object at thrice the distance that it is in 5, and we know that to an eye placed at the centre of the lens it would appear of half the size. What is the proportionate sizes of the images formed by the lens? ·1304 divided by two gives ·0652. The actual measured length is ·0651, showing a difference of .0001, or about 1-250th of an inch.

Again, in 8 the distance of the object is twice as great as in 7, and to the eye it would appear of half the size. The measured length of the images is ·08875 and ·04385. Half of ·08875 is ·044375, showing a difference of ·000525, or about 1-50th of an inch.

Comparing 10 with 9, the object, being at three times the distance, would appear to the eye to be of one-third the size. The measured lengths of the images are ·16975 and ·05655. One-third of the former is ·05658, a difference of ·00003, equal to about 12-10,000ths of an inch.

If we compare 7 with 9, the object, at twice the distance, should appear to be of half the size. Half of ·16975 is ·084875, whereas in 7 the image is measured as being ·08875, a difference of ·003875, or nearly 1-6th of an inch.

It has already been explained that the larger error of observation in this than in the other cases probably arises from the camera not having always been perfectly level.

I think it will be admitted that the differences in all these experiments are not greater than we might expect from errors of observation; and I may state that the whole of the measurements were taken under a focussing-cloth, and read off in the light by my friend, so that in estimating them I could not be unintentionally influenced by a knowledge of what the measurement ought to be. In three cases the image of the nearer object was observed slightly greater, and in the fourth less than it should be.

Corollary C.—Of two objects of the same size, but at different distances, the size of the images produced by a non-distorting lens, on a flat focussing screen, will bear the same proportion to each other as the actual objects would bear to an eye placed at the centre of the lens. And this is independent of the focal length of the lens, for in 5 and 7, where the distances are the same, but the lens different, in each case the image is twice as large as in 6 and 8, where the distance is double; and this law is also independent of the distance of the lens from the object, for it holds equally good in 9 and 10, although in 9 the lens was actually at a less distance from the object than the height of that object—that is, as if a full-length portrait of a man 6 feet high were taken with a camera, the centre of whose lens was only 5 feet 3 inches from the middle of his body; and yet we find, even in this extreme case, that the proportionate size of the images is the same as that of the objects themselves as they would be seen by an eye placed at the centre of the lens.

I think it will be universally admitted that if a sheet of glass is fixed vertically between the eye and the model or the landscape, and a painter sketches on the glass exactly what he sees through it, without moving his eye, the perspective of his portrait or view will be perfectly correct. But we now see that this is exactly the image that a non-distorting lens will produce. Again, supposing the eye to remain always at the same place, the painter may vary the size of the image by altering the distance of the glass from his eye, a greater distance giving a larger image, and corresponding with a longer focus; a shorter distance with a shorter focus and also a wider angle, for the glass will then include more subject.

An observation of Mr. James Martin, in the "News" of November 13, appears at first sight to contradict my conclusions, as he found that a wide-angled lens placed in front of a brick wall gives an image with straight lines for about 25° on each side of the centre, but with converging lines beyond that angle. It is, however, evident that he did not use a rectilinear lens, for I cannot give that name to any lens which does not represent *all* the straight lines in the subject by straight lines in the picture.

From my conclusions, then, I can see no escape, unless my experiments can be shown to be faulty or fallacious: every rectilinear or non-distorting lens must inevitably give true perspective. Why the picture produced by it does not always give the impression of true perspective is quite another question, and one which is very much more difficult to solve; it is one of which we shall never find the solution as long as we try to throw the blame upon our lenses, instead of honestly taking it upon our own shoulders.

If you will permit me, I will at some future time venture to throw out a few suggestions as to the cause of the *apparently* false perspective we so often see in photographs; in the meantime, as my only object is to elicit the truth, I shall be very glad if your readers will kindly point out any errors I may have fallen into, and give any further illustrations of the subject we wish to elucidate.

Geneva, December 8th, 1868.

ON COMBINATION PRINTING.

BY NELSON K. CHERRILL.*

The subject which I have to bring before your notice this evening is one of such magnitude and importance that I feel the very imperfect sketch which I shall be able to give of it will by no means do justice to its varied claims. It is my purpose, however, to make the matter as clear as I am able to do, and to treat of it in a manner which may be understood by all. The importance of combination printing is, I think, derived from two considerations: It affords the means of supplementing the powers placed in our hands by the opticians to a very considerable extent, and also it gives us a power far beyond that which can even be realized from the most perfect "merely mechanical" instruments. However perfect the instruments may be which the combined science and skill of the optician may place in our hands, there must always be a "something beyond," which can only be reached by supplementing our powers by some such device as combination printing. There is, in photography, a perfection to be gained of a far higher standard than the merely technical excellence of the most perfect of mechanical appliances.

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* Continued from p. 21.

* Read before the London Photographic Society, January 12th.

It was doubtless at first the idea of those who introduced combination printing, merely to supplement obvious defects in the processes then in use, the application of the plan to the more direct purposes of art photography being of a later date. Even now, although the powers placed in our hands by the optician are so great, and notwithstanding the perfection at which the chemical part of the process of photography has arrived, it is often very advisable, in treating a large class of subjects, to adopt the method of combination printing, in preference even to using more direct means. I more particularly refer to those subjects in which "cloud effects" form a prominent feature. In cases such as these the usual plan is to take the sky on one plate and the landscape on another, and join the two in printing. This is probably the simplest effort of combination printing, as well as the one used most frequently by the majority of photographers. I am unable to find the first mention of the plan of combining two or more pictures, but it is to Mr. Rejlander that photographers are indebted for the first application of combination printing to the direct purposes of art photography. In his celebrated picture of the "Two Ways of Life" (first exhibited, I think, in 1857), the wonderful art power of combination printing was first called into being. The idea of taking a picture in a number of different parts, and then combining these together so as to form one harmonious whole, was indeed a great advance upon the old notion that a photograph must consist of the view presented to the camera at one time—nothing more and nothing less. Mr. Rejlander's idea was to make a picture of a scene which he had imagined, not of one which could be really placed before the camera, so as to be rendered in a merely mechanical manner.

In a work of this character it will be obvious that the perfection of each individual part will be in a great measure independent of the perfection of the whole, as a whole; each part is by itself a photograph, having its own perfections and its own faults; and each part bears as much the impress of the mind of the artist as any single subject can do; but the whole is a result entirely dependent upon the mind of the artist, and but little affected by the particular merits of each individual part. This, it appears to me, is a complete rejoinder to those who affect to state that, as the "camera has no soul, photography can never be an art." It was not the camera which produced the "Two Ways of Life," any more than the brickmaker makes the house. It was the artist, Mr. Rejlander, who produced the picture, just as it is the *architect* who builds the house.

It is not my intention—nor is it, indeed, my business—to enter upon any detailed criticism of this, the first great combination picture. The picture will always have a great historical interest as being the first effort—or, at any rate, the first successful effort—in its own particular direction; and all photographers should be duly thankful to Mr. Rejlander for having so boldly launched out on such a difficult task, and for having so successfully shown the possibility of attaining so much excellence in imaginative art by the means of photography. However great the success of Mr. Rejlander's picture, I do not think that imaginative art is the true sphere of photography, and particularly I do not think that it is possible to represent an abstract idea by photography; as, for instance, the central figure in the "Two Ways" does not, to my mind, represent "Repentance," but it represents a "Repenting woman." But, as I say, I am not going to criticise, and so I will at once turn to the practical part of the subject.

The actual plan adopted in the production of the picture of which I am now speaking was described by Mr. Rejlander in a paper read by him at a meeting of this Society on the 6th of April, 1858. The picture having been roughly sketched on paper, the figures were taken in separate groups—or singly—on a number of different negatives. I am not aware of the exact number of negatives which were employed in the production of the picture, but I think about thirty were used. The whole of the negatives having been taken, the printing was proceeded with in the following manner:—One of the negatives was placed in the printing-frame, and the paper laid upon it. The exact position which the negative occupied on the paper was determined by measurement, and having been accurately adjusted, the back of the frame was put in and fastened up: during the printing of the first negative all the paper was shielded by means of a large velvet cloth, so that the light should print only through those parts of the negative which were needed to form the picture. When the first negative was printed enough, a second was placed also in the position measured for it, and it in turn was printed, taking care to shield all the other parts of the paper with the velvet cloth. By a repetition of this process, using a new negative each time, the whole picture was at last printed in; and then, as far as I am at present concerned, the picture was complete. This method is not exactly the one now considered to give the best results, and, though differing nothing in principle from the plan now adopted, is, I believe, never made use of at the present day.

Before turning from the consideration of this picture, I wish to point out two things connected with it which have to my mind an important bearing on the various criticisms which have been made for and against combination printing: The first is that the *perspective* of the picture, wherever there are lines which can show it, is, if not absolutely correct, sufficiently good for all purposes of art; the other point is, that some parts of the picture, though they look right in size, are very much enlarged from their true proportionate sizes. The drapery of the background, for instance, was arranged in quite a small room, while you will see that the arch in the centre is of considerable size, being taken from a garden; and it is probably 15 or 20 feet in height. I do not defend this, but I point it out, because it shows that to produce a good art result it is possible sometimes to deviate a little from the absolute fact of nature. It would probably have been impossible for Mr. Rejlander to have obtained drapery of the magnitude of that which he has represented in his picture, but an enlarged view of small drapery, if it does not give the absolute fact which it was intended to represent, gives a representation sufficiently near for the purposes required.

Next after the "Two Ways" came Mr. H. P. Robinson's picture, "Fading Away." This was published about a year after the work of Mr. Rejlander; and I have the pleasure of being able to show you the first print produced of it.

I, although Mr. Robinson's partner, indeed have no hesitation in saying that this picture has also an historical interest as being the first picture of the long series of works of the class which have made Mr. Robinson's name famous among photographers.

The manner in which this picture was taken was almost precisely identical with that which was adopted in the "Two Ways," with this exception: the figures were taken separately, but with their appropriate background. The operation of printing was thereby rendered much more easy, and the joins are more difficult to detect in consequence. This picture has a point of interest which I must not let pass unnoticed. I should mention that at the time this picture was taken it was made a matter of considerable discussion whether or no the subject was one fitted for the accurate and realistic display of photographic art; it was *because* Mr. Robinson considered the subject was one eminently *unsuited* to the *absolute* rendering of an ordinary photograph that he chose the picture for his first serious attempt at combination printing. It was because the subject would be considered so awful and so painful if it were rendered simply photographically, that Mr. Robinson chose it to try to show that the amelioration of art could be introduced into even the commonly supposed unplastic art of photography. The principal figure, the lady, who *is* "Fading Away," has in the picture the appearance of one in the last stage of consumption. Unless this could have been shown, the picture would have been a mere body without a soul; it might as well have been called by any other name. But was this lady really in such a state of decline as she is here represented to be in? By no means. Though the picture was taken ten years ago or more, the lady is now, and was then, in a state of robust and vigorous health. The difference between the absolute fact of nature and the apparent fact shown in the picture is here well illustrated. I think we need no other argument to show that a photograph *can* be something more than a mere soulless "copy" of an object, or person, or thing.

(*To be continued.*)

ACETIC ACID IN TONING.

BY E. T. ANTHONY.[*]

FOR some time past it has been my habit to pass all our prints through a water acidulated with acetic acid, after their first washing and before toning, which gave me results better than heretofore had by simply washing in water.

I suggested this method of treatment to Mr. Newton, who never does anything by halves, and he at once tried a stronger dose of the acid (30 drops of acetic, No. 8, to a quart of water), and placed the prints therein from the pressure frames, allowing them to remain some two or three hours, until he was ready to tone, and then passing through one wash of pure water merely to remove the excess of acid water. I have tested, to my entire satisfaction, his modification of my suggestion, and strongly recommend it, as requiring less gold, less over-printing, and less time in the toning bath.

YELLOW LIGHT FOR THE DARK ROOM.

BY PROFESSOR TOWLER.[†]

I WILL tell you all about my own dark room. In the first place, I prepare the colour with which to cover the panes of glass in the window, a large window containing sixteen squares. About a pint of starch is first prepared, somewhat thinner than that used by the laundress. Into this stir an ounce of a saturated solution of subacetate of lead. In a separate vessel dissolve an ounce of bichromate of potassa in hot water, and add this solution gradually to the starch, stirring the mixture all the while over the fire, until you have a fine, bright, slightly orange yellow-coloured thin paste. Cover all the panes of glass with this yellow colour, and repeat the operation about three times, always taking care to allow the first coating to dry before you apply the next. By taking the sashes out from the window, the thin yellow paste may be poured upon each pane like so much collodion; of course the sash must be supported horizontally. In the latter case, a single coating will be sufficient. The light that passes through such a window will be yellow light; all the other colours of the spectrum will be stopped, absorbed in their passage through the coloured glass. Where I develop the negative pictures I have another window, but this is horizontal and fixed in the table containing all the chemical preparations for developing, fixing, &c. So situated, you can hold the plate to be developed above it, and thus watch the operation of development by transmitted light.

But you say: Will not the white walls, ceiling, and woodwork reflect white light upon your negative?

To obviate any interference of this nature, an interference that really exists—for the yellow light reflected from a bright white surface is less yellow after such reflection than before, just as chrome yellow is less yellow after admixture with starch than without this white substance—all the walls, ceiling, and wood-work are either washed over or painted with a yellow colour. Chrome yellow mixed with a little slacked lime is just the colour for the ceiling and walls, and a chrome yellow oil colour is suitable for the wood-work. During development, all white light must be excluded by closing the door and other apertures and crevices through which light can pass.

COFFEE PROCESS.

BY J. J. BARDWELL.[*]

I HAVE found occasion in my practice to somewhat modify my work in the preparation of the plates. I find a substratum of albumen, 1 of egg to 10 of water, and even more dilute, to be better than the gelatine. Wash the glass plate in pure water, and, while still wet, flow with the dilute albumen, and set up to dry, which it does very rapidly. Next, after the plate is coated, sensitized, and washed, to flow with a weak solution of bromide of ammonium, say—

Water	1 ounce
Bromide of ammonium	4 grains.

After flowing, wash and immerse in the coffee solution. I find an advantage in preparing the coffee solution in the following manner:—Pour cold water on the ground browned coffee, and let stand for several hours, and then filter the decoction through the grounds several times, and then dissolve half the quantity of sugar heretofore recommended; dry quickly, and with considerable heat. No matter what may be said to the contrary, these plates thus prepared will keep, and I find them at the end of six weeks sufficiently sensitive to take vessels in motion.

I find the method of alkaline development for dry plates, by Peter Mawdsley, described in the PHOTOGRAPHIC NEWS ALMANAC of 1868, page 61, to be very excellent.

Correspondence.

COCKLED LARGE PRINTS.

DEAR SIR,—In your last issue I find a letter under the above head; with your permission I would make a few remarks. I quite agree with Mr. Sherborn, but why the necessity of such a roundabout way of keeping the frames idle (a thing of some consequence during the dull months, when prints are most liable to cockle) until the paper was ready to be put under pressure? Why not follow out the old remedy, viz: well dry your paper, then place for some time in an atmosphere the same as the printing will be done in? And I will guarantee that whether you print in a garden or indoors you will never have a cockled print.

After years of practice with sheets the largest ever printed in a frame, down to C.D.V. size, I have never found it to fail.

With the compliments of the season—I remain yours,

A PRINTER.

PS.—If a little more attention was given to the above system, we should not hear of cockled prints, winter or summer.

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[*] Read before the Photographic Section of the American Institute.

[†] *Philadelphia Photographer.*

[*] *Philadelphia Photographer.*

COCKLING OF PRINTS IN THE PRESSURE FRAME.

Sir,—In Mr. Rejlander's ingenious suggestion for the prevention of the cockling of large prints in the pressure frame he has, I think, overlooked the fact that perfect dryness is a most unfavourable condition for successful printing.

Mr. Seeley, in an interesting article, recently pointed out a fact which I had often noticed, namely, that if the pads used in the pressure frame were quite dry, the prints were flat and feeble, never bronzing in the deepest shadows, no matter how long the exposure. The same fact has before been alluded to, I think, in your columns. If this be a general fact and not an exceptional thing, it is clear that warming and drying the pads, whilst it would prevent cockling, would introduce a worse evil. I think the only remedy for cockling—which is sometimes, especially with large prints, a serious nuisance—is to endeavour to keep the pads and the excited paper as nearly as possible in the same hygrometric condition: which would, I presume, be secured by keeping them in the same atmosphere for a while before bringing them in close contact in the pressure frame.—Yours obediently, A Printer.

PS.—Since writing the above I have seen Mr. Sherborn's suggestion in this week's News. It appears to me to meet the case perfectly. I am obliged to both gentlemen for bringing the subject under discussion.

[The intention of Mr. Rejlander's suggestion was to secure an equalization of the moisture in the padding at the back of the sensitive paper and in the sensitive paper itself. Mr. Sherborn's suggestion will also serve the same end admirably. Absolute desiccation is unnecessary, and would very materially tend to retard the progress of printing.—Ed.]

WATERPROOF GLOVES.

Sir,—It occurred to me some time ago that a really effective waterproof glove might be made by applying to ordinary buckskin gloves successive coatings of a solution of bichromate of potass and gelatine. Is there any reason why this should not succeed? and would there be any advantage in substituting "chrome alum" for the bichromate?—Yours obediently, Clean Hands.

[Gelatine rendered insoluble by a chromic salt and the action of light would not be sufficiently flexible and pliant for the purpose, but would readily crack; moreover, the oxide of chromium present would be acted upon by the chemicals. A pair of buckskin gloves might probably be made waterproof by treatment with a solution of indiarubber.—Ed.]

RETOUCHING NEGATIVES.

Sir,—I have just looked over the Year-Book, and there is much in it worthy of attention. Its tendency is to elevate photography, which is greatly to be desired.

One of the leading points in your Year-Book is the subject of touching-up negatives. Some object to it, others uphold its practice. Now my idea of the matter is this. There is fine weather and bad weather photography. Any man who really desires high-class photography will only take a picture in fine and seasonable weather. With such advantages any first-class photographer ought always to take first-class pictures. But any man who works for the public generally takes pictures in good and bad weather. To such a person touching-up negatives now is almost a necessity. There is nothing, however, that requires greater caution or talent. The art should be merely to modify hard lines, and to give roundness to the features, strengthen high lights, &c., but in no case to alter the likeness.

I foresee in this practice in unskilful hands nothing but detestable inroads on this otherwise beautiful art. To touch-up a negative as it ought to be, time is required, and none but an artist ought to attempt it.

Another subject deserves attention. The public are too apt to cast all the blame on the poor photographer. I hold that the public themselves require education. Every photographer knows how difficult it is to get people to be easy and graceful under the influence of the lens. The truth is, all these matters are carried on in too great a hurry. If ever anything required the greatest talent and care, it is taking a portrait in photography; so far from its being an easy art, it is most difficult, so many points requiring careful thought and skilful manipulation. I believe there is the best prospect for the future in photography when the subject of light is properly and artistically understood, and glass houses are constructed on wiser principles.—I am, sir, yours truly, An Artist.

REMUNERATION OF ASSISTANTS.

Dear Sir,—As an assistant in our profession allow me, through the medium of your valuable paper, to tender my sincere thanks to your correspondent, Mr. James Martin, for the idea which he proposes to introduce into our profession.

Since reading his letter I again feel that better days are looming in the distance for us poor assistants, and that once more our services will be remunerated as of yore.

I give you an instance of what is expected from us for a labourer's wages.

I answered an advertisement from your paper the other day which ran to this effect:—

To Photographic Printers.

WANTED, a really competent hand, &c.; liberal salary; permanent employment.

Some two weeks after I received a reply, asking me to forward specimens, which I did, and received another reply, saying that my specimens were approved of. Would I send carte of self, and salary expected? Thinking I would not name too extravagant a sum, I said 30s. per week. The result is, that I have never received an answer to it. So I conclude that the sum mentioned frightened this truly liberal employer.

Now, sir, I ask you, is it not time that something should be done to alter this state of affairs? To which, I presume, you will answer, Yes. Then, as a remedy, I hope some of our leading men will embrace this opportunity of following out the idea of your correspondent, which will enable once more the heart of your humble servant to feel lightened of its sorrow.—I am, sir, your most humble servant,

Plain Paper Revived.

THE "PELETAN LIGHT."

Sir,—So many are interested in procuring a good light for photographic and other purposes, that you will excuse me enquiring whether you or any of your correspondents can give information as to the "Peletan Light," which was exhibited in London some years ago. The light was very clear and white, and it was said that under it colours were distinguishable. It appeared to be a beautiful light, and the whole apparatus was like a moderate sized Arnot stove, and was placed in the room. I made some enquiry about it at the time, in full expectation that it would be brought into general use. I believe that the reason of the failure was the too sudden condensation of the vapour. The vapour or gas was made from a mixture of naphtha and water in certain proportions, which, being heated, produced the vapour.

If the apparatus was as simple as the outward appearance indicated, it would be well worth renewed experiments, as arrangement of the pipes for special purposes might obviate the condensation.

The more recent introduction of mineral oils strengthens the hope that some useful invention may be made in this direction, which will be useful both for photographic and general purposes. J. M. G.

[Can any of our readers furnish our correspondent with the desired information?—Ed.]

Proceedings of Societies.

London Photographic Society.

The usual monthly meeting was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, January 12th, the Rev. J. B. Reade in the chair.

The minutes of a previous meeting having been read and confirmed, Mr. Woodbury was elected a member of the Society; and Mr. G. Bishop and Mr. H. B. Pritchard were elected auditors.

Mr. **Spiller** exhibited and described some of Dr. Moffat's oleographs, to which we have referred in a preceding number.

Mr. **Cherrill** then read a paper on Combination Printing (see p. 30). The paper was illustrated by a fine collection of photographic compositions produced by combined printing, consisting of the principal pictures of this kind produced by Mr. Robinson, commencing with "Fading Away," and ending with "Returning Home;" and of a good collection of Mr. Rejlander's early composition, especially comprising the first combination print ever produced, called "Home, Sweet Home," the first studies for the "Two Ways of Life" with a first rough impression from the negatives, a fine copy of "What Ails Amy," and some others. Mr. Cherrill, concluding his paper, stated that they had laid a trap for clever critics in the "Group of Children" exhibited at the late exhibition. Knowing that some critics were so fond of discovering falsity in combination prints where they knew a possibility of falseness existed, they purposely introduced a false effect where it need not exist; but this had never been detected. The photograph of what appeared a rock in the foreground was, instead of a rock, a piece of garden mould the size of a walnut, photographed full size; and, producing a piece of earth, and crumbling it in his fingers, "There it is!" Mr. Cherrill exclaimed, amid laughter and applause.

Mr. **Rejlander** expressed his gratification in listening to the paper, and said it forcibly illustrated the fact that no one was ever a loser by making a thing known to the public. Where he left off others would begin, and progress, by which he himself might benefit, would result. Years ago he had made known what he had done in combination printing, and to-night he found many details of practice which he might himself adopt with advantage. In regard to the legitimacy of combination printing, it had always appeared hard to him to have to make so many apologies for attempting a right thing. He could not see why the photographer should not be permitted to attempt to produce a composition: to mass, or distribute, or balance his lights and shadows, and to produce those effects by efforts in succession, as the painter must of necessity produce his compositions. If he saw, for instance, a beautiful scene or a fine group which he wished to preserve, he could photograph it on a small scale all at once; but the more beautiful it was, the more anxious he was to have it on a large scale. If the painter saw such a scene, he would produce it one part after the other; he could not do it by any other means. Then why should not the photographer take it in detail, one part after another? It was simply ridiculous to say that it was illegitimate to do so. If it was badly done, it would, of course, look patchy and untrue, precisely as a painting badly done would look untrue; but if it were well done, and looked right, the mode of doing it could not be wrong. It was now an important thing to make the public understand the true bearing of it. He was disappointed in finding slow progress in understanding the thing and its legitimacy in what might be termed the outside world. Two instances occurred to his mind, arising at two periods with twelve years between. When he first completed a copy of the "Two Ways of Life," he called on the late Mr. Ross with it, who called in his son to see it. He at once measured it with a rule to see what angle was subtended, and asked by what lens it was produced. The thing was unknown then, of course. But only last Saturday evening he was in an assemblage of painters at the Langham Club, and Mr. Robinson's recent picture, "Returning Home," was being examined and admired. One artist was commenting on the beauty of the middle distance, and remarking that it was as perfectly rendered as the foreground, instead of being, as was common in photographs, sacrificed to the foreground. When Mr. Rejlander explained to him how it was done, he seemed disappointed, saying, "Oh! that's all, is it?" He thought photographers should aim to make the method known and understood by the outer world. If it became fashionable, it would soon be believed to be true; but there were many people could only see truth in that which was fashionable and customary. He was glad that Mr. Robinson steadily kept the matter before the public, and justified its capacity by his works. There was only one thing in connection with photography he felt was wrong, and that was any attempt to be false to nature. Nothing should be called one thing when it was another. A photograph was too noble a thing to be falsified; it could *teach*, as well as aid, the artist, and it should be kept so true to nature that the artist and the public could always rely upon its truth.

Mr. **Bedford** said that as combination photographs had been so unfairly cavilled at and misjudged, he thought that photographers generally owed a debt of admiration and gratitude to those gentlemen who had stepped out of the beaten track to exalt their art, show its capabilities, and extend the sphere of its usefulness. They were, he thought, especially indebted to Mr. Cherrill for the minuteness and care with which he had explained the mode employed in producing the beautiful results with which they were familiar. He quite agreed with Mr. Rejlander as to the importance of preserving truth in photography. He remembered some very pretty pictures by Mr. Grundy, of shipping scenes, which he (Mr. B.) had admired very much; but he subsequently learnt that they were produced from small models, and the masses of rock from bits of coal. Henceforward he never looked at the pictures with the same pleasure as before. In the individual case to which Mr. Cherrill had referred, an error was intentionally committed to point a moral for the undiscriminating critics who were fond of pointing out imaginary faults, and could not detect real ones. In conclusion, he would pay his tribute of admiration for those who, like Mr. Robinson, aimed to elevate the art, and for that old master of the photographic art, Mr. Rejlander. He well remembered hearing the highly appreciative remarks of the late Prince Consort on the "Two Ways of Life" when it was exhibited at the Art Treasures Exhibition at Manchester.

The **Chairman**, in proposing a cordial vote of thanks to Mr. Cherrill, thought he might safely include in it a unanimous expression of that meeting in favour of the method described, as most legitimate and producing most artistic results, equal, within their own especial scope, to many of the best pictures exhibited in the Royal Academy. And the method of producing them bore some analogy. As the best paintings were taken from many studies produced separately, so were these from various studies and various negatives taken separately and then combined into one harmonious whole by the photographer's method, as the painter produced a complete picture by his method. The fact that in the compositions the figures were portraits could not militate against the art value of the pictures. This was common in paintings. Take Elmore's picture of the "Invention of the Stocking-loom," for instance, in which the female figure was a portrait of the artist's wife. He asked them, in giving a cordial vote of thanks to Mr. Cherrill for this paper, to include Mr. Robinson and Mr. Rejlander as well as Mr. Cherrill, for their services to the photographic community in connection with this branch of the art.

Mr. **Cherrill**, in responding, said that he regarded the Chairman's remark, that the process of combination printing had the approbation of the gentlemen in this room, had paid it the highest compliment possible, for the approbation of *the* Photographic Society was worth having, and at once stamped anything as meritorious upon which it was bestowed. He felt the more pleasure in acknowledging this, because it furnished such an emphatic condemnation of those whose incompetent criticism was doing more than anything else to lower and degrade photography.

The **Chairman** then announced that at the next meeting, which would be the annual meeting of the Society, Mr. Louis Bing would read an article on *Actinometry*, and exhibit his new actinometer. At the March meeting Mr. Woodbury would give a demonstration of his photo-relief printing process, several very fine specimens of which were now exhibited in the room.

The specimens in question were admirable illustrations of the perfection to which this process has now attained, and included some very fine 10 by 8 portraits.

The proceedings then terminated.

American Institute.—Photographic Section.*

The usual meeting was held in December, Professor Joy in the chair.

After some routine proceedings.

Mr Mason, Recording Secretary, read a paper on his method of copying, giving the greatest precision and exactness in subjects requiring the preservation of an exact scale.

Mr. Anthony exhibited some fine stereo prints of exceedingly warm, rich tones, very excellent, particularly brilliant and clear in the whites (see p. 32).

Professor Joy exhibited his album of photographs of celebrated scientific men.

Mr. Anthony described the new "Rapid Rectilinear Lens," made by Dallmeyer, especially useful to the "dry" workers, as being second only to the portrait combination for rapidity of action.

The Reporter to the *Philadelphia Photographer* adds:—"I fully indorse his praise of this new lens, being able, from actual use of an 8 by 10, to assert that it is nearly as quick as the portrait lens, will cover a 9 by 11 plate, sharp to the corners, with very large diaphragm, consequently working deep and thoroughly into shadows, which with tubes that light but feebly is not the case, and copying most excellently well.

"By comparison with the lens (Fitz) I have long used, and by no means a slow worker, the exposure of tannin plates will be reduced 75 per cent.

Various decoctions have been ordered, from time to time, by learned and skilful men, with which to dose the far too slow dry plate, either in its preparation or development; but none have hurried it onward so rapidly as Dallmeyer.

The French Photographic Society.

A meeting of the Society was held on the 4th ult., M. Balart, president, in the chair.

M. Blanc read a short note on obtaining skies in photography. After enumerating the difficulties attendant on the production of these effects direct upon a landscape negative, and stating that he believed no instructions had yet been published in regard to the subject, he said: "I commence by collecting a series of good cloud negatives; then, in order to print from one of them upon an unfixed picture, of which the sky has been carefully shielded from the light, I place the negative in contact with the print in the pressure frame, and partially cover the latter on the outside with a photograph of the same description, cut roughly into shape by means of a pair of scissors. The print outside the frame is likewise an unfixed one, so that it blackens in the light. I expose in the shade, a few minutes being sufficient for the purpose, and when the clouds are printed it is quite impossible to discover even the trace of a join in the finished picture. As it is indispensable to watch the progress of the printing, I attach the mask to the frame by merely moistening it, and this is afterwards dried and preserved with the negative for further use."

M. Poitevin addressed a note to the Society in reference to the recent communications made by MM. Geymet and Alker with respect to photographic enamels. M. Poitevin states that as far back as the year 1863 he instructed more than forty persons in the different manipulations, which, with the exception of the preparation of the sensitive film, are identical with those now made known by MM. Geymet and Alker. These gentlemen, it is true, do not put forward any claim to be considered the originators of the process they teach, but M. Poitevin thinks that in justice to himself it should be recorded that to him is due the credit of having been the first to elaborate the process.

M. Amand Durand presented the Society with several specimens of his heliographic engraving processes.

MM. Geymet and Alker made some further observations on the production of photographic enamels, especially in reference to the best methods of preventing the crystallization of the bichromate in the sensitive film.

M. Ferrier believed that the bichromate bath was of too concentrated a description, and stated that if instead of 10 per cent. only 1½ per cent. of bichromate of ammonia were employed, the operations would be conducted with a much greater degree of certainty.

M. Soulier presented a favourable report upon the keeping qualities of M. Despaquis' sensitive paper. The latter gentleman exhibited specimens of carbon photographs mounted upon painter's canvas, and obtained by means of the so-called *collodion-cuir*.

MM. Schaeffner and Mohr exhibited a new photographic paper sensitized by means of carbonate of silver, and read a note respecting its production, which we have already published.

M. Romain-Talbot exhibited a new enlarging apparatus, illuminated by means of a magnesium lamp.

The proceedings then terminated.

Talk in the Studio.

Photography in the Future.—The *Athenæum*, in noticing Mr. Robert Buchanan's Life of Audubon the naturalist, says:—"Whilst thanking Mr. Robert Buchanan and Mrs. Audubon for a readable and interesting book, we must record a wish for a life of Audubon which shall be written by an ornithologist, and illustrated by an artist with coloured sun-pictures." When will the latter part of this hope become a possibility?

Mr. Woodbury's Photo-Relief Process.—The re-opened works at Brompton have received considerable attention from the outside press, and, notwithstanding some curious blunders in the descriptions of the process, some very interesting articles have been written on the subject. The *Daily News*, in an excellent article, says:—"Photographic printing has ordinarily meant sun-printing; but it will not do so much longer. Indeed, such is the wonderful vista now opened before us that we should not be surprised to see, in the course of the next two or three years, our pictorial contemporary, the *Illustrated News*, printed with all the original drawings of the artists by the new process of mechanico-photography invented by Mr. Woodbury. This is not altogether so wild a prophecy as it seems, for already we have witnessed the printing off of many impressions, precisely equal and similar to the finest photographic copies, almost in the time it has taken to write these words. * * * There is, however, a wide field, and one of incalculable profit and usefulness, open to the Photo-Relief Printing Company, without touching the ground occupied by ordinary printing. The whole round of book illustration would seem to be brought within the compass of the process, and this with a variety and artistic effect hitherto wholly unattainable either by the copper-plate, the wood block, or the lithograph. The very qualities of style and perfection of drawing which we have had so long to lament over as being lost in the translation of the artist's original, can by this means be as accurately placed before the eye as if we were shown at once the picture of the master. We have, in fact, a method of pictorial reproduction perfect, expeditious, and cheap."

Architectural Photographs.—We have received from Mr. Twyman, of Ramsgate, an interesting series of whole-plate photographs of Pugin's church—St. Peter's, we believe—at Ramsgate. The architectural subject is very interesting, and the rendering in many respects pleasing. The lines are straight, and the definition good. They are produced by Mr. Ross's doublet.

Murder of a Photographer.—A daily contemporary states that an inquest was opened at Totton, near Southampton, on Tuesday evening week, on the body of Henry Barfoot, a photographer, aged 26. The wife of the deceased said that he left home on the morning of Christmas-eve with some work he had finished for Mrs. Colt, of Rownham Park, and about seven in the evening he returned with his face covered with blood, and his clothes wet and dirty. The deceased said that he had been set upon by two men at Three Ash-Corner, a lonely spot near his own house, and violently assaulted, being wounded in the mouth and on the head, and finally kicked into a ditch full of water. At an adjourned inquest a verdict was returned to the effect that deceased died from erysipelas consequent upon injuries inflicted by some person unknown.

Fire in a Glasgow Studio.—The Glasgow papers state that an alarming fire broke out in the premises of Mr. John Urie, photographer, Buchanan Street. After the fire broke out it spread with great rapidity, and in a few minutes the photographic studio, constructed of wood and glass, was one mass of fire—the flames ascending several yards above the roofs of the adjacent buildings. Several other buildings were burnt. The origin of the fire is unknown, but there is no doubt that it broke out in the photographer's premises. The damage, the greater part of which, we understand, is covered by insurance, will probably amount to £3,000.

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* Condensed from the *Philadelphia Photographer*.

THE ROYAL CORNWALL POLYTECHNIC.—The thirty-sixth annual meeting of this Institution was held on Friday, the 8th, in the great hall of the building at Falmouth, J. St. Aubyn, M.P., presiding on the occasion. In the course of the proceedings Mr. Dymond read the annual report of the Committee. The exhibition of photographs in connection with the Palestine Exploration Fund had been a very great success, so much so that a committee and society were now forming in Devon to join the Cornwall one, and amalgamate with the original Society in Pall Mall East. The photographs of archæological and typographical importance, with the accompanying plans and underground workings, prepared under the able direction of Lieut. Warren and Sergeant Birtle, had created a large amount of interest, and brought an accession of a great many subscribers to the fund; while the lecture and descriptions prepared by the Rev. Saltern Rogers, on the "Excavations of Jerusalem," have caused a large number of clergymen to become members; their active interest has been warmly met at the head office, and it is confidently expected that the Exploration Society will receive a great amount of benefit and support at their hands.

IMPORTANCE OF CLEANLINESS IN CHEMICAL OPERATIONS.—The idea of cleanliness in all its accuracy is known only to chemists. When preparing a substance for analysis, is there any trouble that we avoid if we can aid success? What! in a vile laboratory? Yes; no foul air must touch these bodies. Air, that which the most sensitive persons would consider sweet, would be poison. The slightest trace of carbonic acid or moisture, things found in all breezes, would make some analyses imperfect. We can well remember when in that stage of learning when sulphur and hydrogen are so much employed for metals, we rushed forward to seek advice, but were driven back from the sanctum by the usually most urbane and pleasant friend. What could that mean? He was preparing a silver salt in order to obtain an important atomic weight.—*Chemical News*.

To Correspondents.

W. W.—Our back volumes contain a large number of articles on the construction of glass rooms. If you have the volumes, a glance at the index will assist you. Our YEAR-BOOK for 1866 contains an exceedingly useful article on the construction and arrangement of the glass room, by Mr. Hughes. Our YEAR-BOOKS for 1864 and 1865 also contain much information on the subject, and some diagrams.

J. L. W.—The most prominent fault in the card you enclose is the use of too dark a background. Wherever a portrait is intended for vignetting, the background should be light, so that the vignetted portion may be graduated softly into the white margin. It is important, also, in order to secure a good effect, to avoid making the vignetted portion of a formal, regular shape, and also to avoid leaving much of the ungraduated background overhead. 2. We never recommend home-made varnishes. There are so many conditions necessary to the preparation of a good varnish which are beyond the control of an amateur, that success is rarely attained. The quality of the individual sample of gum, for instance, will often require a modification of formula which only experience can suggest. The strength of the alcohol may also be at fault. The formula you mention would scarcely, we think, produce a first-class negative varnish, as it would lack hardness. But the defect you mention—the occurrence of a series of dull rings—is probably due to two causes: insufficient resin and too weak alcohol. 3. The object of using carbonate of soda in the fixing bath is to increase its solvent action on the silver salts, and to prevent the decomposition of the hyposulphite and the liberation of sulphur. The purpose for which hypochlorite of soda was recommended was to remove the final trace of hyposulphite from the washed print by converting it into a sulphate. Its use has not been generally adopted. 4. The gelatino-iron developer generally requires the plate to be a little longer exposed than the ordinary plain iron solution. If you wish to use it, the best plan is to add a little of the mixture you describe to a plain iron solution. You will find very full information on this subject, and various recipes, in our YEAR-BOOK for 1868.

P. F. SALISTUNG.—A silver bath used for floating iodized paper will keep perfectly with proper care, without other precaution than occasional strengthening.

W. G. P.—As a rule, after flooding with the golden syrup solution and draining, the plate will be insensitive to ordinary daylight; but samples of the syrup may differ somewhat in this respect. It is scarcely wise, however, to run the risk of exposure to full light. It is better to place the plate in the box at once, and examine in a dull light at home. There would be some slight risk of allowing a solution containing iodine to remain on the plate, as it would tend to convert the reduced silver forming the image into iodide of silver. If you wish to try it, use not iodine, but iodide of potassium; this would stop development and prevent fog. It might, however, slightly interfere with the facility for subsequent intensifying; but this will be best determined by trial.

J. G. B.—We shall have pleasure in showing you the Adam-Salomon pictures if you call at our private residence, 36, Canonbury Park South; Wednesday is the best day to find us at home with certainty.

OXONIENSIS.—For general usefulness we should select B out of your list; but if you require the lens for landscape only, an ordinary single lens will answer your purpose as well as any, will work as rapidly, and will give the most brilliant image.

CITRIC ACID.—You are still scarcely sufficiently explicit. You do not state at what stage of the operations the spots appear. If there is no turbidity in the collodion or bath, possibly your hypo fixing bath has been decomposed by some means, and such spots might then be caused by free sulphur in the fixing bath.

Πι Pω.—Ammonio-nitrate of silver is made by adding liquid ammonia to a solution of nitrate of silver. The first result will be the formation of a precipitate of oxide of silver. Ammonia is still gradually added until the precipitate is redissolved. This solution constitutes ammonia-nitrate of silver. 2. A solution containing 3 grains of each will serve.

T. E.—The card portrait enclosed is a soft, good photograph.

REFLECTOR.—It is quite possible to repair the "silvering" of a looking-glass, but unless you have a little manipular skill you had better entrust it to those accustomed to such work. The mode of proceeding is to cut away a portion where the abrasion is, so as to get a space of regular shape and with clean edges. Then take a piece of tinfoil a little larger than the space and drop a little mercury on its surface, where it will quickly spread and form an amalgam. The piece so treated is then to be lifted by means of a brush or piece of cotton-wool, and applied to the glass and gently pressed down.

OLD SUBSCRIBER.—To become a member of the Photographic Society, you require to be proposed and seconded by a member, and your name will then be submitted to the ballot of the members. The subscription is one guinea a year, and there is an entrance fee of one guinea. We agree with your remarks on the Relief Fund. Thanks for promise of contribution. Your letter was, unfortunately, mislaid, or it would have been answered last week.

J. MAYCOCK.—Frost effects have often been photographed effectively, but we are not aware that the frost figures on panes of glass have been taken. That it would be quite possible there can be no doubt. Possibly, however, the effect can be more easily imitated by the various crystalline effects produced by solutions of different salts. 2. The object of fuming sensitive paper for prints is to neutralize any free acid present, and to form oxide, and so secure greater sensitiveness. 3. By the mode which you propose you would form a portion of acetate of iron, which tends to give more vigour than sulphate of iron; but no other advantage would be gained. 4. The original process we know produces very good negatives; and for those who do not object to preservative processes as distinguished from dry processes, it is a good process. We shall have pleasure in giving you our opinion of the print. 5. As a rule, the wet process is desirable for interiors where there is little light.

M. D.—The full account of the enamelling operations of Messrs. Geymet and Alker is given in their book. We have published their various communications to the French Society. You will find a tolerably clear account of a method similar to that they use in our new YEAR-BOOK.

COL. GREENLAW.—Thanks. The communication did not, unfortunately, arrive in time for our YEAR-BOOK, but we shall have pleasure in inserting it in the NEWS. We shall also take an early opportunity of testing and reporting thereon.

J. ROBERTS.—In our next.

TUNBRIDGE WELLS.—A communication containing notes on various subjects, dated Tunbridge Wells, but without any signature, received.

W. P. F. (H. K.).—We are much pleased with a sight of the interesting Chinese photographs. Both the views and the portraits are good.

Several Articles in type, and Reviews, are again compelled to stand over until our next.

Several Correspondents in our next.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

THE PHOTOGRAPHIC NEWS.

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THE LIMITATIONS OF MR. SWAN'S CARBON PATENT.

ON another page we print a communication from Mr. Blair, in which he enters tolerably fully into an examination of the extent and limitations of the patent granted to Mr. Swan for carbon printing. Mr. Blair is one of the oldest and most ingenious, and continues one of the most constant, carbon experimentalists in this country, his name being associated with an independent discovery of the most important of the principles involved in carbon printing. He is in no wise connected with professional photography, and all his labours have been given freely and disinterestedly for the benefit of the public. With such credentials, Mr. Blair will be listened to with attention, and any discussion which may arise from his remarks will be free from the complicating element of commercial interest. The validity of Mr. Swan's patent, or of any of the individual claims contained therein, can, of course, only be settled by a legal tribunal, and a layman's opinion will not weigh in the legal issue; but unless we are much mistaken in our view of the matter, Mr. Blair regards the monopoly conferred by Mr. Swan's patent as much more comprehensive and sweeping than it really is, or is claimed to be. As a clear idea of what is public property, and of what is protected by the patent, is of some importance to photographers, we shall briefly state what appears to us to be the facts.

At the outset we may state our conviction that, however comprehensive may be the specification of Mr. Swan's patent, he cannot acquire by it an exclusive property in anything which he did not originate. All that was publicly known or in use before the date of the patent is public property still. The patentee possesses, in common with the public, the right to use all that was known, and to use it in conjunction with new operations of his own; but he acquires no exclusive right in anything but the new operations, and cannot in any way interfere with the public right to apply the public stock of knowledge. Remove the novelties introduced by Mr. Swan, and all other operations in carbon printing still, we believe, remain unprotected.*

Mr. Blair classifies the things known before Mr. Swan's patent into five divisions:—1st, the use of bichromate of potash as a sensitive agent; 2nd, its use with gelatinous substances; 3rd, the necessity of exposing on one side, and washing on the other; 4th, Fargier's method of effecting this; 5th, the use of a bath of bichromate to sensitize a gelatinous surface. Of none of these can Mr. Swan claim the origin, and all of them are still open to the use of the public; and we repeat—because it cannot be too well impressed on the minds of photographers—that all the public knew and used before the date of the patent in question they are at full liberty to use now.

It is not necessary here to enter into a discussion on the propriety of patenting inventions based on progressive discoveries. The expediency of such patents is open to discussion, and much may be said on both sides of the question. The right to patent such inventions cannot, we suppose, be disputed, if the monopoly secured be confined to the actual novelty introduced by the patentee. This is the essential point, a knowledge of which is important.

Let us enquire, then, what was the novelty introduced by Mr. Swan into carbon printing? The answer, it seems to us, is very simple: he introduced a *thing* and a *method*, both of which had their analogues in former processes, but not in such a form as rendered them easily practicable, or available for commercial purposes. The thing was a distinct tissue, readily and perfectly permitting exposure on one side, and development on the other; a tissue which provided for the sensitive film a temporary support, which could be removed to expose the opposite side of the film to the operation of development. Until Mr. Swan produced it, such a tissue was, we think, unknown. It had its analogue in Fargier's glass, bearing its coating of sensitive pigmented gelatine; but the limitation in size involved, and the inconvenience of using glass, as well as of the subsequent operations, sufficiently checked the general use of Fargier's process. Swan's tissue also had its analogue in some sort in Poitevin's original form of prepared paper, and in the prepared paper which Mr. Blair has described in conjunction with various experiments; but the paper in these cases never had, nor was intended to have, the character of a temporary support, removable, to permit development on the side of the sensitive layer originally in contact with the paper, and opposite to that exposed. We believe, then, that the first novelty consists in the production of a tissue consisting of the carbon compound and collodion or "other suitable substance," permitting, in a practicable and convenient manner, the exposure on one side, and the development on the other. So far as we have evidence, such a tissue had never before been described, and was unknown to the public. This, then, as it seems to us, is the novelty as regards the *thing*. The novelty in *method* consists in mounting the exposed tissue on a suitable substance, so as to permit the convenient development of the image on the side of the layer of the carbon compound opposite to that which had been exposed to light. Such a plan had not, so far as we are aware, been proposed before. It had its nearest analogue in Fargier's method of coating his exposed gelatine with collodion, so that when the glass was plunged in hot water the exposed surface was protected by the waterproof coating, and the image developed after the film of gelatine left the glass. The difficulty of the manipulations here naturally limited the application of the process.

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* Since this was written, we have seen the specification of Mr. Ernest Edwards, which appears, however, chiefly to claim the exclusive use of certain transfer papers.—ED.

In another point we think Mr. Blair is under some misconception. In according to Mr. Swan the credit of using india-rubber for temporary mounting, he adds, that if Mr. Swan "had confined his patent to that particular [the use of india-rubber], no one could have had any just cause to grumble." Unless we mistake the matter, the use of no particular adhesive medium for mounting is protected—merely the use of a tissue which, by such mounting, permits development on the opposite side, and the mode of mounting by which it is effected. Any suitable adhesive medium may be used, but none, so far as we understand the matter, is patented. Mr. Blair speaks of albumen and starch paste as included in the patent. As we understand the matter, no adhesive material whatever is patented; but whilst suitable adhesive material may be used in carrying out the patented operations, so also may any of the adhesive materials named be employed without infringing the patent, provided the patented tissue and the method of mounting for development be avoided.

It is difficult, and perhaps not important, to say when albumen was first used for mounting previous to development. The first record of it is in the Photographic News, the 20th of May, 1864, where Mr. P. Henderson, in a letter dated May 12th, describes it as follows:—

> Take a piece of albuminized paper (I have used the paper for silver printing, but, of course, the salt would be omitted when prepared for this purpose); slightly damp it, so as to make it quite sticky all over; lay the tissue gently down on it, beginning at one side, so as to prevent air-bubbles; lay a piece of clean paper over both, and rub down briskly till the two are quite adherent to each other, just as in mounting a silver print. Then, on a piece of clean glass, pour a few drops of strong alcohol, spread over the glass, and lay the mounted tissue down on it, paper side down; let it lay a few seconds, when the albumen will be thoroughly coagulated. Pin up till thoroughly dry, when it will be ready for development, and no amount of soaking will ever separate them.

This, as Mr. Blair had not seen, but as he will observe, was published at an earlier date than his own article on albumen for mounting; but, as Mr. Blair points out, it is defective, in so far as it suggests the coagulation of the albumen after mounting, instead of before, which Mr. Blair has shown to be necessary. The idea of making a transfer tissue and mounting it for development occurred to Mr. Davies, it cannot be doubted, as early as 1862, but, unfortunately, only in relation to photolithographic operations. In July, 1864, speaking of his former experiments, he says:—"Had I been less intent on photolithography in tints, and had my eyes open to direct printing from the negative, probably you might have had a carbo-gelatine process from me long since."

As the matter stands, however, certain points in the production of carbon prints in half-tone appear to be protected by patent, and the fact that this is so is not altogether loss to the public, inasmuch as the possession of an exclusive right has given incentive to careful and persistent experiment for perfecting the process, which probably would not otherwise have been undertaken. No one will be called upon to pay for the use of the improvements in question, we believe, except those who intend to make a profit out of them; for we have understood—and we hope and believe that we are not mistaken—that the privilege of free use of the patented method which Mr. Swan intended should be permitted to amateurs will also be accorded by the *cessionaires* of his patent, the Autotype Company.

PHOTO-ENGRAVING AND PHOTO-LITHOGRAPHIC PROCESSES ON THE CONTINENT.

We were recently favoured by Mr. Waterhouse with a sight of a large number of examples of photo-lithography and photo-engraving, collected in the chief Continental cities which he had visited expressly with a view to ascertain the progress in these branches of the art, and report upon them to that branch of the Government with which he is connected, and by whom he was commissioned to make the report. As Mr. Waterhouse had, in virtue of his letters of introduction, access to excellent sources of information, and opportunities of observation, his report will possess much value. He has promised to furnish our readers with a *résumé* of such information as shall possess the greatest value. As, however, this report is from unavoidable causes delayed, we now give a brief description of the specimens of chief interest which came under our attention.

We were scarcely prepared at the outset to learn that in a very large number of establishments the use of bitumen of Judea is preferred to gelatine and a bichromate, both for photo-lithography and photo-engraving. Several fine specimens of photo-lithography in half-tone which we saw were produced, Lieut. Waterhouse informed us, from a stone prepared with bitumen. A grained stone was coated with a solution of bitumen in turpentine, exposed under a negative, washed off with turpentine, and the stone containing the image again slightly grained. By such a process it will readily be seen that a good printing surface with granular half-tone can be obtained. The best photo-engravings in line which we saw were done at the Royal Printing Office, Berlin. The method, briefly described, was as follows: A copper plate was coated with a solution of bitumen, exposed under a negative, washed off, and etched with hydrochloric acid. From the relief image thus obtained, an intaglio image was produced in electrotype, and this formed the printing-plate. The results were exceedingly fine. The most perfect photo-lithographs in half-tone were, however, unquestionably those of M. Tessie du Motay. The process must be regarded as belonging to lithography, although neither stone nor zinc, but a copper plate, is used, as a support for the gelatine film. The results are exceedingly beautiful; but, unfortunately, as we have before stated, capable of producing a very limited number of impressions.

Foreign Miscellanea.

The *Photographisches Archiv* contains news of the Hamburg Photographic Exhibition, which, owing to the considerable increase that has recently taken place in the number of exhibitors and visitors, it has been decided to keep open until Christmas, and to illuminate with gas, in order that the building may be thrown open both day and night. No English photographers seem to have forwarded specimens of their skill, a fact which is much to be regretted, as the collection appears to be one of the most complete that has ever been brought together. Photographers from almost every town in Germany, from Russia, from America, from India, and from France have sent in pictures, those from the last-named country including many of the best Paris firms. Thirty-two silver and sixty bronze medals, besides many honourable mentions, were awarded, the eight successful candidates for the first group of silver medals being MM. Franz Benque, of Trieste; Bergamasco, of St. Petersburg; Caccia, of Havre; Luckhardt and Matzner, of Vienna; Reutlinger and Adam-Salomon, of Paris; and Verveer, of the Hague.

A meeting of one hundred photographers was held at Hamburg, during the Exhibition, to consider the question of forming a German Photographic Association, to be held every two years in one of the larger towns of Germany. The Association is not to interfere in any way with the different photographic societies, but will confine itself principally to the elaboration of the following subjects:—The establishment of a photographic copyright; the creation of a relief fund for widows; the starting of a journal as the organ of the Association: the institution of future exhibitions, &c. A committee was appointed to consider the subject, consisting of MM. Albert, Kruger, Luckhardt, Richter, Schrank, and Stinde.

The *Mittheilungen* for December gives a specimen print of M. Gruue's photographic process. By this method a photograph of any object may be transferred to a wood block, and the latter is then engraved in the ordinary manner. By adopting a process of this kind the engraver on wood effects a considerable saving of time, and is enabled to render the object more faithfully.

M. Albert, of Munich, has succeeded in producing some very fine photo-mechanical prints by a method, it is believed, somewhat analogous to that of M. Tessié: M. Albert's prints appear, however, to be superior to those of that gentleman, as no grain is apparent in them. The process is also stated to be a much more serviceable one, for whereas, in that of M. Tessié, it is possible to pull off but 70 copies from each plate, by means of M. Albert's as many as 1,000 may be produced.

Dr. Vogel states that he has received many approvals of Mr. Gordon's gum process, one gentleman of his acquaintance having obtained three dozen good negatives out of three dozen dry plates. This photographer states that the plates are endowed with excellent keeping qualities; his manner of preparing them was, however, slightly different from the method as originally made known. After washing the plate twice with distilled and once with ordinary water, he poured over it a 3-grain (a saturated) solution of gallic acid, and afterwards, before drying, treated it with a coating of—

Gum arabic	20 grains
Sugar-candy	5 ,,
Distilled water	1 ounce

The negatives produced could not be distinguished in any way from wet collodion plates.

To convert the liquid from old dipping baths into a serviceable solution for sensitizing paper, M. Lother, in the *Mittheilungen*, recommends the addition of three times their volume of water to precipitate the iodide, and then filtration until the argentometer indicates a strength of 10 per cent. of silver. If the iodide remain in the solution, the toning proceeds very slowly, and the prints assume a reddish tint on fixing.

M. Braun, of Dornach, has recently enlarged his establishment, to enable him to proceed more rapidly with the carbon printing. All reproductions of pictures taken by him are produced exclusively in pigments, although for landscape negatives, &c., the silver process is still used. At Hamburg, the firm of Meucke and Co. have recently adopted the carbon process, which is worked under the superintendence of M. Schaarwachter, a former pupil of Dr. Vogel's.

At the December meeting of the Marseilles Photographic Society, M. Meynier again opened up the question of the employment of the *Sel Clement*, of which he had made two analyses, the first giving:—

Nitrate of silver	40 parts
Nitrate of magnesia	60 ,,

The second analysis was of a sample received direct from M. Clement, and gave results as follows:—

Nitrate of silver	38 parts
Nitrate of magnesia	62 ,,

In using, therefore, a bath containing 15 per cent. of *Sel Clement*, one was working with a solution containing, in reality, but 5·85 per cent. of nitrate of silver; according to M. Meynier the magnesia, for which a very high price was paid, was of no advantage, and he therefore protested against the pretensions which had been put forward on behalf of the compound.

At the same meeting M. Taylor exhibited an ingeniously contrived photometre, consisting of a series of cylindrical cells, covered with an opaque material through which openings had been made, all of precisely the same dimensions; the number of these openings varied in every case—as, for instance, the first had three, the next six, and so on. At the base of these cylinders was a sheet of sensitized paper, which became blackened by the diffused light entering through the openings, and, of course, where the latter were most numerous, there the greater amount of light entered, and the paper was the more rapidly acted upon. The results obtained were afterwards compared with a standard scale.

The *Moniteur de la Photographie* contains an interesting article on the measurement of light, by M. Radau, in continuation of the paper on Photographic Chemistry by the same writer.

A correspondent of the same journal, writing from Gibraltar, comments in exceedingly favourable terms upon the work of M. de Antez, of that town. The Spanish studies of this photographer are said to rival the work of the best Paris artists, his skill being shown in the great variety of his subject-pictures, whether depicting a love scene with guitar accompaniment, or a deadly combat of war to the knife. Among M. Antez' most striking studies are, "Repose after Work," the sun setting over a calm landscape, with Spanish peasants resting at the threshold of a cottage decked with overhanging creepers, and listening to the sound of a guitar played by a handsome black-eyed brunette; and "Waiting for an Answer," a young gallant, gorgeously attired, smoking a cigar, and awaiting the expectant reply, for which he will evidently not have to stay very long, judging from the attitude of the lady, whose profile is seen at the partly opened lattice. The "Devil's Tongue" and the "Governor's Cottage" are mentioned as two of the finest landscape views produced by M. Antez.

A new toning salt was described at the last meeting of the French Photographic Society, which has received the name of *Sel Encausse*. It is mixed with a larger or smaller quantity of water, according as sepia or black tones are required, and shaken up until in a frothy condition. It is then allowed to settle for four-and-twenty hours, but, before employment, is again agitated. A quantity sufficient to cover the prints to be toned is poured into a porcelain dish, and the photographs are then plunged into it in a dry condition without previous washing, the bath being slightly warmed if the process is required to be performed rapidly. This method of toning is said to be a very economical one, for the excess of nitrate of silver upon the prints may be subsequently collected as a residue in a very pure state by pouring back the solution into a bottle, allowing to settle, and then decanting off the upper portion of the liquid.

At the same meeting of the Society, some albuminous colouring materials were shown by M. Talbot for application to albuminized surfaces, which, if large, are incapable of receiving pigments in the ordinary way. In order to apply these albumen colours the surface of the print is first moistened, and the pigment then diluted by means of a brush impregnated with water; the picture is then covered with successive transparent coatings of colour until sufficient intensity has been produced. The colours brighten up on drying.

Dr. Phipson, the able English correspondent of the *Moniteur*, in alluding to the fact of an atmosphere being purified by the combustion of sulphur and the generation of sulphurous acid, states that inasmuch as silver photographs are injured by contact with this latter compound, the air contained in the photographic galleries might be purified by this means without any fears being entertained of the result. He states that pastilles of sulphur are now manufactured in London which do not melt, but burn, and are, therefore, specially suited to the purpose.

According to the *Photographische Correspondenz*, the Sultan has just conferred upon M. Friedrich v. Voitlander the decoration of Officer of the Order of the Medjidie, in appreciation of the valuable services rendered by that gentleman.

The same journal contains the text of a series of interesting lectures upon photographic chemistry, delivered by Dr. E. Hornig at the Imperial Polytechnic Institute at Vienna. Dr. Hornig carefully goes into the history of the art, and details with much accuracy the early experiments by Charles, Davy, Wedgwood, Hooper, Young, Niepce, and Daguerre. He also gives a *resume* of the progress of photography, its adaptation to metal plates, to paper, and to glass.

M. Edmond Becquerel has just published a work entitled "La Lumière, ses Causes et ses Effets," in two volumes, the first of which treats of the sources of light, while the other details its effects. The book is a very complete treatise of what is at present known of the subject, and the writer has gone into even the most minute details in respect to photography. A chapter upon photography in colours contains an account of the researches and experiments which have been made in that direction, and the whole work is illustrated with many original woodcuts and engravings.

PHOTOGRAPHY IN HOT CLIMATES:
Especially its Employment for Taking Views of Buildings and Dark Interiors.

BY DR. H. VOGEL.

When I was taking part in the expedition for astronomical and photographical observation of the eclipse at Aden, in South Arabia, as well as in the archæological photographical expedition for taking interesting interiors of Upper Egypt, I had opportunity for making a series of observations which are of much practical interest to the photographer, and which I propose to communicate briefly to the reader, expecting that I may give some valuable hint not only to the photographer in tropical countries, but also to our compatriots; for, as we have seen in the summer of this year, some European climates may become sometimes very similar to that of the torrid zone.

To the photographer who works in a hot climate several difficulties arise in an intensified degree which we are troubled with in operations in our country, as, for instance, dry spots, fogs, insensibility of margins, which are commonly ascribed to the high temperature alone; but my experience at Aden and in the desert has taught me that the amount of moisture present in the air plays a very important part too. In the atmosphere at Aden, highly saturated with moisture, I was allowed to expose wet plates without any further precaution for twenty minutes, at 26° Reaumur (90·5 Fahrenheit), without having to fear dry spots. In the dry air of the desert, however, I had dry spots at the same temperature and with the same chemicals after six minutes. At Aden long exposure offered, therefore, but very little difficulty, whilst in the desert and in the valley of the Nile, enclosed on both sides by the desert, they exhausted my patience. Similar observations will be made in Europe in hot months, and it will be found wise to take our precautions according to the amount of moisture contained in the atmosphere. First, a few remarks about the

Apparatus.—During my longer operations in very dry and very hot districts of Upper Egypt I observed that apparatus constructed of wood—as cameras, tripods, &c.—very soon became so dry that the planks warped or burst. From this cause a large new tripod, the camera, and especially the small objective boards, were nearly made useless. In order to avoid this trouble, all wooden parts are to be sheeted with metallic bands, which prevent the boards from separating, but not from warping and shrinking. I secured the same end by putting into the camera, even when it was not in use, a piece of wet sucking-paste, and covering this with a wet cloth. We may also moisten the head-cloth, and we shall perceive that under it the heat is very much diminished. For the same purpose the cloth of our tent was often moistened from the exterior.

We employed a camera constructed by Mr. Meagher, London. It could be distended from two to twelve inches, allowed of employing objectives with very short focus, stereoscopic plates to plates of 8½ and 6½ in any situation, and was very portable. For taking architecture, especially very elevated details, as friezes and relievos, we employed, besides an ordinary tripod, a very large one, the feet of which consisted of three parts which could be taken to pieces; its height was twelve feet. By taking off the upper part it was shortened to eight feet.

For taking ceilings, &c., it is necessary to employ the camera in a vertical position. We therefore screwed it to the side of one of the legs of the above-mentioned tripod-stand, and this latter placed into proper position, with the lens pointing upwards. Canting of the tripod was prevented by the heavy weight of the feet, which could be increased still more by large stones. It is always, in my experience, preferable to employ a heavy tripod-stand; the more solid its construction the better it will resist the wind. The small English tripods are so much shaken by the breeze that photographing is very often impossible. Our tent was one of Mr. Rouch's construction.

Objectives.—With our operations we were often obliged to take a view of walls covered with inscriptions and relievos which were but very weakly illuminated. In such cases it is of importance to employ an objective which, with a large aperture, gives a bright image with details to the very margin, in order to get a clear picture in a proportionally short time. Steinheil's aplanatic lens proved most suitable. No. 3 of this lens afforded sufficiently sharp images of 7 by 9 when we employed the second stop. It has, compared with other architectural lenses, a large aperture (one-seventh of the focal length), and a flat field. Besides this lens we employed also Busch's triple and pantoscopic lenses, and Dallmeyer's triplet and wide-angle lens, when we had a sufficient amount of light. All objectives gave pictures of 7 by 9, but their focal length differing from 4 to 10, they were employed alternately, according to the distance of our point of view from the object.

The Light.—The very weak illumination of the Egyptian temples and tombs often obliged us to take our refuge to a remedy till now little employed in photography.

Wherever it was possible, we increased the illumination by reflected sunlight. This means is a very excellent one, especially in Egypt, where there is no want of sunshine. We employed two ordinary mirrors of 4 inches in size. Two persons held the mirrors in this manner so that the sunbeams were reflected to the object which was to be taken, and by slowly moving the mirrors during the exposure the illumination was made as even as possible. Dark spots of the object naturally received the sun rays for a longer while than light ones. With Steinheil's lens, six or seven minutes' exposure sufficed for taking such objects, and even a shorter time would have done if we could have disposed of better reflectors.

Where this means could not be employed we made use of magnesium light, which, however, requires a very actinic objective. Our lens was a portrait lens, with full aperture. Naturally, we got but a very small field of sufficient sharpness, so that we could only take a plan of six inches size. It is necessary to approach the magnesium lamp to the objects as near as possible, but also to take care that the natural disposition of light and shade is not spoiled. It will also be very useful to move the lamp during the exposure, so that all parts of the object are equally illuminated, and to provide for wind, to remove the smoke of the magnesium lamp. If the object is about thirty inches distant from the lamp, the magnesium light is of no great use. It is very difficult, too, to photograph in caves with magnesium light, for the smoke fills the upper parts of the cave, and prevents further successful operations. As an instance of the consumption of wire, I may state that with Dallmeyer's portrait lens of 2¾ of diameter and third stop, 15 inches (equal to 4 grammes) of wire were required for taking a grey wall of 6 feet extension.

Very often we employed reflected sunlight, magnesium light, and daylight at once, where it was necessary to give additional light to dark corners. Perhaps the best lens for this purpose is Dallmeyer's new patented portrait lens, because it has a large field and even picture; but I have not yet tried it.

Collodion.—As collodion, we employed the already-described equivalent collodion.* It keeps for months without colouring yellow, contains a very little amount of ether, and is, therefore, to be poured on very easily, and evaporates very slowly, giving a spongy layer, which does not dry too rapidly in high temperature. Collodions which dry rapidly are of no use in the desert at all. At 30° R. (100° Fahrenheit), a temperature which our thermometer showed very often in shade, one side of the plate was already dry, when the other side dripped still if we employed an ether collodion. When the air was very dry, and long exposures were required, dry spots sometimes appeared. In such cases I added, with much success, some of Beyrich's collodion from an old red stock. The bottles containing collodion must be wrapped up in wet cloths to keep them cool.

(To be continued.)

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MR. SWAN'S PATENT.

BY WILLIAM BLAIR.

I have perused with some interest the editor's remarks in a recent number of the Photographic News, January 8, p. 22, in reference to the operation of Mr. Swan's patent; and I must say that while I have no wish to be unjust to Mr. Swan, or to withhold the credit to which he is well entitled for his successful ingenuity, I have often regretted that he should have thought it necessary to include in his patent so much that belonged to other and prior processes. This was, no doubt, partly necessary, *descriptione*, to render his narrative intelligible: but what is his own, and what is not, is left very undefined, and it was not difficult to foresee that this would have a deterring effect on the prosecution of new discovery. Of course it is said that the patent will not be operative in regard to what was known and practised before, but so many things are all linked together in his specification as necessary to bring about the results aimed at, that every one cannot draw the distinction between what has been originated by the patentee, and what is public property. Experimenters are kept in terror lest unwittingly they may lay themselves open to an unpleasant challenge.

I am aware that Mr. Swan, in the brief controversy I had with him about this very process of single transfer by means of albumen, which occurred after he had applied for his patent, but before he had completed or signed or lodged his final specification, stated in one of his letters that he had no intentions of interfering with amateurs, or those following the art for pleasure; only he wished to share in the profit of any commercial speculations. Now, however, that Mr. Swan has sold his patent, it may be doubtful how far even this indulgence—shall I so call it?—may be granted, if the technicalities of the law, or its terrors, can prevent it. Companies are proverbially selfish, and sometimes push matters with an indiscretion that individuals of good feeling would be ashamed of; although it may be hoped that the Autotype Company will prove an exception to this rule. For the reasons above touched upon, however, I am strongly disposed to sympathise with the complaint of your correspondent, "A Carbon Amateur."

Let us for a moment look at the different parts of the process that were known, and in one shape or other were practically brought before Mr. Swan's patent was obtained, and we shall be able to judge of what is strictly his.

First. The sensitizing material was an old discovery of Mungo Ponton's, and has long been free to everybody.

Second. Gelatine, albumen, gum arabic, and other similar organic substances mixed with coloured pigments and bichromate, and applied to glass, paper, &c., substantially similar to the composition of Mr. Swan's tissue, but, perhaps, not laid on by the same sort of mechanism, were used by M. Poitevin, M. Fargier, and others, long before Mr. Swan's process was heard of.

Third. The correct method of sunning these preparations on one side, and of washing them on the opposite side, was explained and practically tested in a variety of ways by myself, M. Fargier, and others, at a pretty early period. It is true in regard to this, Mr. Swan says that he also, about the same period, recognised the same principle, and attempted to work upon it, and I have too much respect for Mr. Swan to doubt his statement; but he admits at the same time that he failed in his first testing experiments. That being the case, he of course failed to satisfy himself; and the matter became public property through other channels. It did so at the end of 1858 and beginning of 1859. Mr. Swan's patent was obtained as late as 1864, and yet it is worthy of particular remark that in his specification he ignores the previous knowledge and practical application of the method of treatment referred to. He says, near the beginning of his specification, "The employment of paper in the way it has been employed hitherto, not only as a means of supporting the coloured coating, but also to form ultimately the basis or groundwork of the print, obstructed the removal of the inner or back portions of the coloured coating, and prevented the obtaining of half-tone." He thus ignores the process, which was then well-known, of sunning on the one side, and washing on the other; and then he goes on to say that his invention consists in the formation of tissues that can be lighted on one side, and "also allow free access of water and the unobstructed removal of the non-affected portions of the coloured matter from the opposite side, or back, in the act of developing." In short, he describes this as if he was the inventor of the entire improvement, which certainly he was not.

Fourth. M. Fargier sunned on the bare gelatine film, and was the first to lift that impression and wash on the opposite side. He did so by means of a coating of collodion, and affixed the picture to paper by a process somewhat delicate and difficult to manipulate, no doubt, but involving the very same sort of management, which is more easily effected, certainly, by Mr. Swan's rubber varnish, or by the use of albumen. Now look at the matter in this aspect: Suppose Mr. Swan's patent had existed prior to M. Fargier's (for he took out a patent also), would not the adoption of Fargier's method by any one have been regarded at once as a colourable infringement of Mr. Swan's patent? Well, transpose the chronological position of the two patents, in the case supposed, and what is the evident deduction? Is it not that Mr. Swan's process is substantially the same as Fargier's in this particular?

Fifth. As far as I can learn, I was the first myself to use a sensitizing bath in carbon printing, and to prepare paper with an unsensitized coating of gelatine, albumen, and pigments, to be kept in stock, and only sensitized when about to be used. This was in 1863, and was published in connection with a process which I then recommended for direct printing. Previous to that time the bichromate had always been mixed with the carbonized substance employed when applied to the supporting medium, and the consequence was that the mixture or prepared medium quickly deteriorated by keeping. The use of this bath is a prominent feature in

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* See my letter on the Aden Eclipse in the Photographic News.

Mr. Swan's process, and enables him also conveniently to prepare any quantity of unsensitized tissue, and keep it in stock for use, or dispose of it by sale. This apparently simple arrangement has aided much in rendering the prepared materials for carbon printing conveniently mercantile.

All these particulars now stated are more or less part and parcel of Mr. Swan's process, without which he could not work it, and none of which he can claim as having originated.

But there is one important part of Mr. Swan's process which is his own, and which nobody. as far as I am aware, has ever been disposed to dispute: I mean the use of india-rubber varnish to effect the transfers of the impressed film, and which admits of a convenient adjustment of the picture in the final mounting as regards right and left, although taken from an ordinary negative. This is the leading feature in Mr. Swan's process, which is doubtless a thing of value, and which is admittedly his; and if he had confined his patent to that particular, no one could have had any just cause to grumble.

But his patent, as already stated, also includes albumen and starch paste as mediums of transfer to a permanent support where a retransfer is not wanted. This part of the patent is, I much suspect, never wrought practically, but remains a dead letter in the hands of the patentees, and if others are debarred from using it, then, contrary to the intention of the Patent Laws, the public are deprived of its use altogether.

Now, in regard to this matter, I may explain that Mr. Swan applied for his patent in or about February, 1864; and somewhere about that time he explained, at a meeting of the London Photographic Society, his invention so far as lifting his prepared films from the glass was concerned, and the use of the india-rubber varnish in effecting a double transfer. Thereafter, as he was allowed by the Patent Act some six months to prepare and file a complete specification, he left the matter to rest till the specified time was about to expire. Then I find that on the 5th of July of that year, and before his patent was published or completed, I wrote a letter to the *Photographic Notes*—which, by some unusual delay, did not appear till 15th August—explaining a mode of transfer by means of albumen, which had cost me some thought and trouble, and which I considered simply an improvement of Fargier's method; and on this paper being published, Mr. Swan then came forward and found fault with the process as imperfect (not adverting to the circumstance that I used reversed negatives) on the ground that it misplaced the objects in the picture; but at the same time he stated that he had not overlooked this process, but that it would appear in his specification, which was soon to be published. Mr. Swan's specification was published, and appeared in the journals in the course of the following month (September), when it appeared that it had been signed and completed upon the 27th of August, about twelve days after the publication of my letter; and, as he had stated, it was then seen to contain a reference to albumen, &c., as a means of transfer. I suppose nobody knows but Mr. Swan himself whether at the time the patent was applied for and certified that particular phase of the process had been contemplated by him. I will not treat Mr. Swan so uncharitably as to believe it had not. At the same time, I do not think the public were then made aware that his patent was to embrace this process. I did not see the advertisements, and cannot speak of this as a matter of fact; but if such be the case, then, I believe, great doubt will hang over its legality. Moreover, I have since learned from Mr. G. Wharton Simpson's work on "The Production of Photographs in Pigments," which was written, apparently, chiefly in the interests of Mr. Swan's process,* that even as early as 1862 Mr. Davies, of Edinburgh, had employed albumen as a means of transfer, and that this had been referred to in a paper read before the Edinburgh Society in 1863, though not fully divulged till the following year—indeed, in the course of the same month, apparently (viz., July). when my paper was lying in the hands of Mr. Sutton, or probably waiting in Jersey for his return from some of his boating excursions.

In the whole circumstances, I could have much wished that Mr. Swan had seen his way to give up any claim to the exclusive use of albumen. He might have done this without the slightest inference being drawn that he had not experimented with it as an independent idea of his own, and perhaps, if within his power, he may think of doing this yet. I believe it would remove some existing dissatisfaction. To tell the truth, the use of albumen as described in his specification is a critical and uncertain process. For one thing, his description is somewhat vague, for he does not explain how the albumen can best be applied. He only says that the transfer is to be made by means of it, and it is to be coagulated before development. Now I send enclosed a print transferred to raw albumen—that is, albuminized paper moistened, such I suppose as Mr. Swan meant should be used—and if it is examined closely, a curious reticulation, or rather dottiness. will be observed in the background and half-shades. That is a specimen of some of the tricks that albumen plays when coagulated only after being attached to the gelatine tissue. I never detected anything of that kind when I coagulated my albumen by spirits before attachment to the gelatine. But the question recurs, on the supposition that Mr. Swan does not withdraw his claim, Is albumen, which has long been known and used as a paste, forbidden now to be used in any form as a transfer medium for carbon prints, because it has been introduced, in the manner explained, into Mr. Swan's patent, and that however valuable the improvements may be that have been or can be introduced into the method and form of applying it, and however useless and inoperative it was and is in the hands of the Patentee? Well, it will be said this is a question of law, and who is to answer it? I shall not attempt the answer at present, but content myself by remarking that these observations are made more in the interest of the public than myself. and not with the slightest wish to annoy Mr. Swan, for personally I have no reason to do so, but rather the reverse, for he has always treated me in a most kind and friendly manner, and given me every encouragement and facility to try his process, which I did, and succeeded perfectly. But the process I have been referring to is really not known or recognised as "Mr. Swan's Process," and he should remove all doubts as to the legitimacy of using it.

Bridgend, *Perth*, 13*th January*, 1869.

RECOVERING THE GOLD FROM OLD TONING BATHS.

BY F. W. HART.

[At the last meeting of the South London Photographic Society the enquiry, "What is the best method of recovering gold from old toning baths?" having been found in the Question-Box, the discussion was opened by Mr. Hart with the following remarks.]

I generally proceed by first rendering the inert solutions of gold acid with sulphuric acid, or hydrochloric acid. Then add a hot saturated solution of sulphate of iron, till the solution ceases to be rendered cloudy by any further addition. Stand in a warm place for subsidence before pouring off the clear waste solution, add a few drops of iron solution, to make sure that the gold has been completely deposited. Such being the case, drain off as closely as possible, and wash with three or four changes of acidulated water, and finally with plain water. The precipitate will now consist of metallic gold and chloride of silver. In order to get the gold in a separate state, I prefer to reduce the chloride, and bring the metals into a button, and add about three times its weight of silver, pour it out into a pan of water, collect, and dissolve in nitric acid. The gold will be left as a dark brown powder. After decanting the nitrate of silver solution it is repeatedly washed with distilled water till the washing gives no indication of silver on testing with a chloride; drain off the water closely, and dry at a gentle heat, finally bringing the powder to a low red heat, when the powder will take a rich golden hue.

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* The work in question was undoubtedly written expressly to afford detailed instructions for the working of Mr. Swan's process. In the chapter of "Historical Notes" the only aim was to record facts, without reference to any interest but that of truth.

If the mixed precipitates of gold and chloride of silver are not reduced and melted, but treated at once with hot hydrochloric acid to which nitric acid is added at different times till effervescence ceases, then the solution must be largely diluted with water, in order to counterect the property that hydrochloric acid and concentrated chlorides have in holding chloride of silver in solution; then, to get at the amount of gold, it must be reprecipitated.

I have had many samples of residue sent to me for examination, which consisted, in great part, of sesqui-oxide of iron. This precipitate would be readily mistaken by the non-experienced for the precipitate of the noble metal. I have accounted for this fact by supposing that the photographers had simply added the iron solution, as they have been generally informed, to an alkaline solution, carbonated, no doubt, and thus produced a carbonate of iron, which eventually passed into the state of the red oxide.

A COPYING CAMERA.

BY FRANK HOWARD.

At the last meeting of the South London Photographic Society, Mr. Howard, anticipating an exhibition of transparencies by Mr. How, laid before the meeting some fine examples produced on wet collodion, and described the camera employed. He said:—

"I have here the dimensions of a very convenient form of camera for printing transparencies from any size negative from 10 by 8 downwards, using a quarter-plate or short-focus card lens. The camera can be used for enlarging or copying, and is for the amateur a most useful instrument. A base board 42 inches long has affixed to it a rigid body 20 inches in length, not quite in the centre, but in such a position as to allow two sliding bodies (one at each end) to play easily; one sliding body is 15 inches in length, the other is 7 inches. The focussing-glass, the carrier, and the holder for the negative to be copied will fit either end of the camera. At the top of the rigid portion of the camera is a door which, when opened, allows the lens to be placed in any position that is desirable, by means of grooves cut at various distances, in which the lens front can slide. By this means any size lens can be introduced, and, by reason of the carrier fitting either end, the distance between the sensitized plate and the lens or the object to be copied, enlarged, or diminished, can vary from about 5 inches to 36 inches, and all are perfectly parallel.

ON COMBINATION PRINTING.

BY NELSON K. CHERRILL.*

As it would be tedious and unprofitable to go through the whole series of pictures which I have brought to illustrate this paper, remarking on the particular methods adopted in each case, I therefore propose to jump at once from the first of Mr. Robinson's pictures to almost the last of them, and to consider in detail a picture which is, I believe, now in the hands of almost every member of the Society. I refer to a little print called "Watching the Lark," which is printed from two negatives, and which is as good an illustration of combination printing as I can bring before you, as it is done on what I believe to be the most perfect technical system at which we have yet arrived. First of all, the foreground on which the child is seated had to be arranged. Had we the convenience of being able to take pictures of this kind out in the open air, the foreground would consist of a simple bank of wild flowers, weeds, &c., which would be always in a state of wild cultivation for the purpose. As, however, our space is somewhat limited, we have to work in our studio, and therefore the foreground is "made up" of an artificial bank, on which turf, moss, and wild flowers are growing.* Behind this foreground a white background is erected. The little sitter was then posed, and the first half of the picture was taken. This negative when printed would represent the child, the foreground with the basket and hat, and all the distance, white, or nearly so. It was found, however, that the background printed a little too much for the sky, making it rather too dark; consequently, a piece of tissue paper was cut to shield the sky portion, its outline corresponding with that of the hills; on this piece of tissue paper the clouds were *painted* with indian ink. At the two bottom corners of the plate two marks were now made with black varnish: ⌞ ⌟. These, of course, printed white in the picture. A proof was now taken, and the outline of the figure cut out accurately. This was to be the mask of the landscape negative. Where the outline of the figure comes against the distance, the line of junction must be exceedingly clear and defined; but where the foreground and background join, there is more latitude allowable, and the mask need not be accurately cut, but may be torn carelessly with advantage. The mask is now fitted to its proper place on the landscape negative. Another print is then made on a piece of paper of the size of the finished picture; this time the little white marks made with the varnish are cut away with a sharp pair of scissors. The print is carefully applied to the landscape negative, so that the mask made before exactly covers those parts of the print which are already finished. The landscape is thus printed in. Before, however, it is removed from the printing-frame, if on partial examination the joins appear to be perfect, two lead-pencil marks are made round the parts cut out at the bottom of the print on the mask. After the first successful proof there is no need for any measurement or fitting to get the two parts of the picture to join perfectly; it is merely necessary to cut out the little white masks and fit the corners to the pencil marks on the mask, and there is no need to look if the two pictures are in proper position; they must be so; and, so long as the picture keeps in proper adjustment, the print can be put on and taken off as rapidly almost as if the work were from a single negative.

It was found that a sheet of tissue paper across the landscape negative would improve the distance, and that the application of a little black varnish dabbed on with the finger would serve to make the joining more perfect in one or two places. When all these little arrangements were once finished, we rattled off the two hundred copies for the Society at the usual rate of about four or five a day, with very few failures, and with still fewer bad joins.

The negatives are on the table; and I have also brought prints in various stages to illustrate the plan more fully. A similar mode of operation to that which I have just described may be used for pictures of any size; but when the paper is larger than about ten inches square, it becomes advisable to examine the position of the paper on the second negative before putting the picture out to print. In small pictures, as I have already stated, the system of gauges, which has been explained, is abundantly sufficient, and there should be no need whatever to examine the relative positions of the paper and the second negative; but in larger works there are greater difficulties to overcome; gauges cannot be made so accurately, and, when made, they do not admit of such perfect manipulation as in small prints; for this reason, though they should be made as much use of as possible, gauges must not be entirely trusted to.

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* Continued from p. 32.

* See Year-Book of Photography on "Laths," by N. K. C.

A variety of expedients have been resorted to by different operators to enable them the more perfectly to see the relative positions of the negative and paper. When the "May" was printed, Mr. Robinson used a printing table made of glass, so that by putting a candle on the floor the light shined upwards through the table, and through the printing-frame, negative, and paper too, enabling the printer to see (somewhat dimly, perhaps) the position in which he was arranging the print. A much more simple plan than this is now adopted: by the means of gauges the print is brought as near the position required for it as possible; one hand is then placed on the back of the paper with a steady pressure, one finger of that hand then points to a part of the picture where the join must be accurate (this can always be seen through to the back of the paper in printing); with the other hand the paper is now thrown back over the hand holding it down, and then it will be seen at a glance if the junction is quite accurate at that point at which the finger is held. This operation being repeated at several places determines the accuracy of the joins with great accuracy and very little expenditure of time. A half-finished print which I hold in my hand will well illustrate this method of joining. In this manipulation clean hands, as free as possible from perspiration, are needed. In summer time it is a good plan to dip the hands in water just before changing the prints, and to wipe them quite dry with a clean cloth.

As in combination printing, the size of the negative need not regulate the size of the finished work. It may sometimes happen, as in the case of the "May," that the picture is larger than an ordinary sheet of paper; in this case no difficulty is found in getting the makers of albuminized paper to prepare special sheets of paper for the purpose. To sensitize a sheet of paper 40 or 50 inches long is not such a difficult task as it might at first sight appear; it, however, requires two pairs of hands to perform the operation successfully. Across each end of the sheet a lath is fastened by means of pins. The dish containing the silver solution is placed on a box or small table in the middle of the room, so that there is space to go all round it; one operator now takes one end of the paper, and the other the opposite end; one now lowers his end on the solution, but as soon as the paper touches the surface he again raises it, very gently, however; the other as gently lowers his end till all the paper be wetted; the operation is now reversed, and the end last floated is again raised, the first end being lowered. This goes on till the time for preparing the paper has elapsed, when the sheet may be hung up to dry in the usual manner. This is not a difficult operation to perform; and, as, far as I know, it is the only way in which very large (that is, very long) sheets of paper can be prepared, as dishes are not usually made more than 24 inches long.

It was through some less efficient means being used in preparing the paper on which the "May" was printed that a line in the sky, or rather distance, has occurred. This line, a little darker than the rest of the surrounding parts, though scarcely noticed unless the picture be very critically examined, is a constant source of amusement to all who know its real history. I have heard the criticism dozens of times, "That large picture was not taken all at once, was it?" "No." "Oh, of course not; how stupid to ask! Why you can see the join quite plainly if you look into it." Such is the overwise remark of the superficial critic. Not so, however; you *cannot see the join*, however closely you look; and the more closely you look the more you will be baffled to find it.

I have also brought the following pictures:—Fading Away, 1858; Holiday in the Wood, 1860; Lady of Shallott, 1861; May, 1862; Autumn, Stoneleigh Deer Park, 1863; Sleep, 1867; Returning Home, 1868; Lark, 1868; Group of Children, 1868; Gipsy, 1868; three Sky pictures, 1868. These are all examples of different phases of combination printing. As the pictures are hung in the order in which they were taken, you can by a glance see the differences which exist between them, and the improvements which have been made as one picture after another added to the practice of the artist.

Combination printing has by no means yet arrrived at the fullest perfection of which it is capable; but I trust you will consider that the improvement which is manifested in the comparison of the earlier pictures with those of more recent date gives no small hope of still further advances in the year to come.

This brings me to the most important part of my subject: The *art* of composition printing; not the art of composition, but the art of so taking a picture in parts as they shall join successfully.

I cannot say very much upon this matter, for two reasons: one is that, important as it is, it is so eminently simple that there is not much to say; and the other, that as each picture needs its own particular scheme or plan, no definite rules can be given, as in every case a somewhat different plan has to be adopted.

I may, however, give a few general hints. Join as much as possible in dark parts, or very dark and very light, but avoid joins of two half-tones in important parts of the picture. Keep the joins as much as possible in unimportant parts of the picture. In the "Lark" this was not done, for the reason mentioned in a chapter of Mr. Robinson's articles on Pictorial Effect, in the Photographic News, viz., to show that combination printing with a join down a facial line in the most important part of the picture was not only possible, but practicable, even when large numbers of prints had to be made; it is, however, by no means to be recommended as a usual thing, and the rule is always to avoid such joins. Another rule of great moment is by all means to hide the joins, and, having hidden them, not only not to tell any one where they are, but to forget them. Critics are so exceedingly clever they can always detect a join when they know beforehand where it exists; but when they are not accurately informed beforehand, they often make the most absurd blunders, such as pointing to the line in the "May," and often suggesting that they see the line very clearly "just there," when in fact they are looking at two points on the same negative.

"Sleep" is a good illustration of well-hidden joins. This picture has hitherto been printed by a professional printer. We have the negatives at home now, though I have never examined them; but until now I have never looked at them, nor do I exactly know how many there are. I should be strangely at a loss if asked to point out where the joins in the picture occur; never having printed the picture, I really do not know where they are, and I do not believe they can be detected.

I do not feel that it is necessary to say much in favour of the legitimacy of combination printing. It seems to me a self-evident proposition that if you cannot take a picture at once, you must do it at twice; and if, in doing it at twice, you can do it so cleverly that no one can find out where the once ends and the twice begins, who is the wiser, you or the critic who finds out the wrong line for a join, and holds himself up to ridicule by his remarks?

But combination printing is wrong, and illegitimate, and everything that is bad, and to be condemned, if attempted by one class of photographers; viz., to those who cannot make pictures; to those, in fact, who do not understand composition. If you cannot make a true composition on one plate, it is quite hopeless to bring two to bear upon the subject; if you cannot see how a picture should be *composed*, you certainly will fail in seeing where the printing should be *combined*.

I believe that two reasons why a certain class of critics are so very fond of quarrelling with combination printing are, first, that they have never been able to succeed with it themselves; and, second, that they try to look upon a picture as being wrong when they hear it is combined. For the benefit of the latter class (though I do not suppose any such can be among my hearers this evening), I should like to point out a little matter connected with a group of children. This picture has received about as much adverse criticism as falls to the share of most pictures. The join between foreground and distance has been furiously pitched into from several quarters, but the real defect of the picture—I may say the real untruth of the picture—has been passed over with the most cheerful unconcern. The line of junction with the distance *must* exist; the critics knew that, so they found it out, but they did not find out the point to which I am about to refer, namely, how the rock in the foreground was done. With no other object in view than to see if the critics would find it out, and so far to test the value of adverse criticism, the rock in the foreground of this picture is not photographed from a real rock, but from a small piece of dried garden mould, taken full size. There it is.

DRY PLATES AS SENSITIVE AS WET.

BY M. CAREY LEA.*

I have succeeded in finding a method of preparing dry plates equally sensitive with those made by the wet process, and requiring literally an exposure no longer than that of wet plates made with a bath in good condition; and this not as an exceptional or occasional result, but regular, practical, and satisfactory.

Early in September last, whilst working with the collodio-bromide and lead bath process, I felt desirous of obtaining such a modification as would give very rapid results. Experiments made with gum as a preservative (or, rather, sensitizer) for collodio-bromide plates showed a great sensibility, but coupled with serious drawbacks. The images were thin and devoid of contrast, often stained, and the film wrinkled up in a very remarkable manner. These appeared so serious that I put this method aside, and made a very wide set of experiments with all the substances that seemed at all likely to give good results. Nothing, however, showed a degree of sensitiveness comparable with gum, and I therefore returned to that process.

I had just discovered that a large augmentation of the proportion of sugar, which I more than doubled, obviated the difficulties above spoken of in a very surprising and satisfactory way, when my supply of cotton gave out, and I also lost my collodion already made. Mr. Cooper's factory having been burned, I could get no more Helion cotton, which I had been using, and thus my experiments were completely interrupted until quite recently, when I have succeeded in obtaining still better cotton than the Helion.

In the meantime I had written to my friend M. Constant-Delessert, of Lausanne, urging him to try the collodio-bromide process, with details such as induced him to take it up; and he, also, experimenting with gum, obtained good results, some information of which has been published. I believe so far, however, his success has not been uniform.

Since a fresh supply of good cotton has enabled me to resume the work, I find that my previous conviction of the rapidity and excellence of the process is fully justified. So far I have not had time to work out the details as fully as I expect to; I shall therefore give the general method here, and hope before long to give further useful information. I can, however, already give such directions as will enable any one to work this method.

The plate is to be coated with sensitized collodion, precisely as directed by me in previous papers. It is then, as soon as set, and without washing, to be plunged into the gum bath, in which it rests five or ten minutes with occasional agitation. The criterion for removing is, that the bath must flow smoothly over the plate without oily lines. It is then taken out and dried.

The gum bath is made as follows:—

Water	30	ounces
Clean gum arabic...	[illegible]00	grains
Loaf sugar...	360	,,
Carbolic acid	6	,,

to be filtered. The object of the carbolic acid is principally to make the solution keep better. The proportion of sugar is raised from 5 grains to the ounce—as indicated by Mr. Gordon in his bath for iodo-bromide dry plates—up to 12 grains; and this change makes, as I have ascertained, the difference between success and failure.

The extreme simplicity of this process is as remarkable as its rapidity: it is simply to collodionize a plate, to plunge it into a bath, and to dry it. One or two points will need attention on the part of the operator.

The pyroxyline must be exactly right. In this respect the gum process is more exacting than that with the lead bath, which I described some time back. It is not that proper cotton is very difficult to make, but simply that the sort needed is very different from that used for wet negatives, and, there being no demand for such, it is not made. For the gum process the Helion No. 1 cotton does not answer well

Another point necessary to be adverted to is this: gum renders the film peculiarly capable of osmotic action; liquids force their way through it, and, consequently, a portion of the developer gets under, not at the edges, but by working itself through the film. The film loosens itself all over the plate, but is firmly held down by the edging; thus the liquid inside moves freely under the film, and, if left there, collects at the lower end of the plate as set up to dry, and makes a brown stain. All that is needed is to stick the point of a pin through the film at the lower corner and let it out (this is best done before the washing off of the hyposulphite); or, in edging the plate with india-rubber, instead of carrying the brush round the corners, leave a little opening at each corner through which the plate may drain itself.

The development is, of course, by the alkaline developer. This I prefer to use as a bath. The dose of bromide of potassium should be liberal. The negative may be put in without any previous washing, and at first the liquid should be kept in motion for a minute or two by alternately raising each end of the plate; this ensures evenness of action, and removes a slight cloudiness which at first shows itself in the liquid.

ON THE ACTION OF SUNLIGHT ON BISULPHIDE OF CARBON.

BY O. LOEW,*

Chemical Assistant in the College of the City of New York.

Pure bisulphide of carbon, when exposed to the sunlight for a considerable time, becomes somewhat yellow. To study the changes thus produced, a large quantity of the bisulphide was enclosed in sealed tubes and exposed to the action of the sun. Decomposition took place gradually, and a brown insoluble substance was formed which adhered so closely to the inner surface of the tubes that it could not be detached by vigorous shaking. This substance prevented the further action of the sun's rays, and consequently the decomposition ceased.

If water be present in the tubes, this adherence is prevented, and a larger quantity of the brown substance is obtained. After an exposure of two or three months the tubes were opened. The water was slightly acid in its reaction, and, after being neutralized and concentrated, it showed a distinct reducing power upon salts of silver and mercury. Evidently, therefore, a trace of formic acid was produced, according to the following equation:—

$$CS_2 + 2H_2O = \overset{\text{Formic Acid.}}{CH_2O_2} + H_2S + S.†$$

On filtration, the newly-formed brown compound remained on the filter, while the filtrate contained free sulphur dissolved in the bisulphide of carbon. On examination, this compound corresponded in every particular to the sesquisulphide of carbon, the substance discovered by

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Philadelphia Photographer.

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* *American Journal of Science.*

† C=12; O=16; S='32, &c.

me two years ago. It was insoluble in water, alcohol, ether, chloroform, bisulphide of carbon, and oils, but soluble with decomposition in a boiling solution of caustic potash. On heating it in a glass tube, it was directly separated into its components; the sulphur volatilized, and the carbon remained.

If sulphocarbonate of potash in concentrated solution be exposed to the sunlight, the decomposition is so slight as hardly to be noticed; when the solution is treated with sodium amalgam, however, a reduction to lower sulphides takes place.

In view of the fact that direct sunlight reduces free bisulphide of carbon, it might be supposed that the corresponding body, carbonic acid, would, in presence of water, be reduced in a similar manner; all my experiments in this direction, however, have thus far been unsuccessful. Nevertheless, since this reduction takes place very readily in the tissues of plants under the influence of sunlight, I am not without hope that this process will yet be imitated in the laboratory.

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MODIFIED CARBON PRINTING PROCESS.

BY ERNEST EDWARDS, B.A.

[The following is the specification by Mr. Edwards of a patent for modifications in carbon printing, or in the preparation of transfer papers for use in carbon printing, entered July 13th, 1868.]

My invention relates to improved means of producing photographic pictures, and consists:—Firstly, in rendering gelatine, gum, albumen, fibrine, and such like organic substances insoluble, for the purpose of receiving, for the process of washing, and permanently retaining gelatine photographs, and for the same purpose or other purpose of photography in preparing paper and other materials by treating it or them with a preparation of the said organic substances (one or more of them) so rendered or to be rendered insoluble.

Secondly. In the use and application of powdered glass as a pigment in the preparation of pigmented paper and surfaces intended to receive photographic pictures.

Thirdly. In the production of tints or colours in (and as a part of the process of treating) paper and other materials for photographic purposes as firstly set forth.

In performing my invention, I apply to a surface of paper, glass slate, metal, or other suitable substance, a coating consisting of gelatine colouring matter and a bichromate, upon which I obtain an image by means of light in any of the well-known manners. To the surface thus exposed to light I apply what I term a transfer paper. This transfer paper may be made of paper of any thickness, surface, or colour, or of linen, canvas, glass, porcelain, wood, metal, leather, or of any substance which does not injuriously affect the materials employed. This transfer paper is prepared with gelatine, gum, albumen, or fibrine, to which has been added sufficient of one of those substances, or of a combination of those substances, which have the property of tending to produce insolubility of gelatine, gum, albumen, or fibrine; for instance, the preparations known as ammonia-alum, iron-alum, and other varieties of alum, acetate of alumina, the chromates or bichromates, bichloride of mercury, and tannin. The preparing of the transfer paper is effected by floating it on, coating it with, or immersing it in the preparation of gelatine or organic substance above described. The transfer paper thus prepared is then allowed to dry, after which it is ready for use; or a suitable quantity of the preparation can be mixed with the pulp of the paper or material in the course of its manufacture. The following is a good formula for the preparation:—Ammonia-alum, 1 part; gelatine, 4 parts; water, 100 parts; but this may be varied. I always use insoluble gelatine or organic substance as above described as the support or cement for the picture during development. The surfaces of the transfer paper and of the gelatinous image obtained by light, having been moistened with water, are placed together in such a manner as to exclude air; the two surfaces adhere, and are in this state allowed to dry. The resulting mass is then placed in water of a sufficiently high temperature to wash away the parts of sensitized gelatine and pigment not acted on by light, together with the paper or other substance which originally supported them; and the picture is found to be very firmly attached to the transfer paper, its adhesion to which is not affected by the use of the warm water employed in washing away the unaltered portions of gelatine and pigment. To produce enamels I proceed in a precisely similar way, substituting vitreous for the ordinary colours, and placing the print on the surface on to which it is to be burnt.

To produce pictures in relief from which to make electrotype or other moulds for printing or other purposes, I proceed in a precisely similar way, omitting, where necessary, all colouring matter; and sometimes I produce on the paper or material which is to be used for transferring, one or more tints or colours by means of lithography or other means. Pictures produced by these methods from ordinary negatives are "reversed." When it is desired that this should not be the case, I first remove the negative or screen from its support. I do this by producing on its surface alternate films of india-rubber and collodion till a sufficient strength has been obtained, or, in place of india-rubber and collodion, I sometimes use gelatine or other organic substance rendered insoluble as above described, either alone or alternately with collodion, and I then remove these films, together with the photographic negative adhering thereto, from its glass plate or support, and print from its reversed side; or I originally take the negative through instead of on the glass plate, or I use any of the other means by which it is usual to print from the reversed side of the negative, such as camera printing, printing by lenses, and other means. And in the preparation of the pigmented paper or substance for printing on, I use, as the colouring matter, carbon, earths, and other colours, aniline and other dyes, and sometimes glass of various colours in a fine state of division.

And, further, I prepare collodio-chloride of silver paper by first pouring on to a glass plate or other suitable surface the collodio-chloride of silver, and having applied to it the transfer paper, remove them together from their support; or I coat the transfer paper with collodio-chloride of silver. I also prepare in a similar way to the transfer paper the surface of paper or other material on which it is desired to attach collodion or other films or substances, so that their adhesion may be unaffected by the action of hot or cold water.

And in the preparation of the transfer paper I sometimes add iodides or chlorides, and use it in place of and in all respects as albuminized or other chlorized or iodized paper is ordinarily used. By means of this my invention the following advantages are obtained:—

1. Greater simplicity in and a great reduction in the number of operations usually gone through in the production of photographic pictures in pigments, whereby the cost of their production is very much reduced.

2. The production of the proof on any material or surface that may be desired.

3. Greater indestructibility of the finished proof.

In witness whereof, I, the said Ernest Edwards, have hereunto set my hand and seal this thirteenth day of January, in the year of our Lord one thousand eight hundred and sixty nine. Ernest Edwards.

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Correspondence.

PIRACY IN AUSTRALIA.

Sir,—Although here, at the antipodes, I am in constant receipt of your much-valued journal; and among other good things it contains, I notice, with pleasure, your detestation of photographic piracy.

It is really too bad that splendid and costly works of art should thus be degraded by dishonourable fellows to be found in the ranks of our profession, who have no sense of honour or justice, but whose only care is to try and evade the clutches of the law.

It is with regret that I see the same piracy game commencing in Victoria; Frith's "Derby Day" and "Railway Station" are now photographed of a size about 20 by 15 inches, and sold in gilt frame at £1 1s. each.

Does your Copyright Act not extend to Australia, or can parties here do in this respect as they like? or is there no party here to take proceedings against offenders?

I am a devoted admirer of high art, and many a time visited the original paintings when in London in 1862; and it is with feelings of deep sorrow I see those pirated copies *publicly exposed and advertised for sale* in the principal street in Melbourne.

Will you kindly state whether the Act extends to Australia or not? and, if it does, I will do my best to let the true state of the case be known, and thus put the public on their guard.—I am, sir, PHOTO, Australia.

Geelong, September 12*th*, 1868.

[After due examination and enquiry, we find that some uncertainty prevails on the extent of the Fine Art Copyright Act. The first section confers copyright on the author, if residing "within the dominions of the Crown"; but other sections, especially that providing the remedy against piracy, only refer to the United Kingdom. In the new Bill already drawn for the attention of the new Parliament this point should receive attention.—ED.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting was held in the City of London College, on the evening of Thursday, January 14th, the Rev. F. F. STATHAM, M.A., in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society: Messrs. Greenwood, Price, Wainwright, and A. H. Vernon.

Mr. WHARTON SIMPSON exhibited an example of Herr Albert's new method of mechanical printing.

Mr. HENDERSON exhibited some fine enamels.

In the unavoidable and unforeseen absence of Mr. How, who had promised an exhibition of his transparencies, the proceedings were of a desultory character.

Mr. HOWARD said that, anticipating the subject of transparencies, he had brought with him a few examples which he had recently produced. They were chiefly from negatives of statuary, taken in the Horticultural Gardens at Kensington. They were produced on wet collodion in a copying camera, which he found most useful and convenient (for description see p. 43). He found that for exhibiting them in a room on a disc of about 8 feet, an argand lamp, with sperm oil and camphor, 2½ ounces of the latter to 1½ pints of the former, gave sufficient light. He found an adapter first suggested by Mr. Taylor a great convenience in placing the slides in the lantern.

Mr. SEBASTIAN DAVIS said that a fine effect was obtained by using a very small disc, produced by a photographic lens; the perfect definition and intense brilliancy compensated for the absence of a greater degree of enlargement.

Some desultory conversation followed, and then the Question-Box was called in requisition.

Mr. HART opened the question as to the best method of converting gold residues (see p. 42).

After some desultory conversation, the question as to the best mode of cleaning old glasses was raised; Mr. Davis describing the extreme persistency of some images on the glass.

Mr. HENDERSON said that a little brisk use of putty powder must effectually clean the glass, seeing that it actually polished away the surface of the glass, and gave a clean fresh surface.

In some further conversation Mr. Lea's cleaning solution of bichromate of potash and sulphuric acid was spoken of as efficient, but unpleasant to use; and hydrofluoric acid as inefficient and dangerous.

The question whether it was possible to keep for use a toning bath made with bicarbonate of soda and chloride of gold was then raised.

Mr. HOWARD said he generally used carbonate of soda, but he made no more toning solution than he required at a time, and never attempted to use it again.

Mr. DAVIS thought that almost all the toning baths which were kept, required the addition of gold before they would tone, and he much doubted whether any toning was effected except that due to the newly-added gold.

Mr. SIMPSON said he had kept various forms of toning baths—notably the lime bath—for weeks, or even months, and used them again successfully without any addition.

Mr. FITCH stated similar experience.

Mr. HENDERSON used the acetate bath over and over again successfully.

After some further conversation, Mr. HENDERSON said he hoped shortly to bring before members a sample of sensitive albuminized paper, which kept without deterioration for months.

The CHAIRMAN said that it had been resolved to devote the May meeting to examination of pictures, and conversation thereon.

The proceedings then terminated.

Talk in the Studio.

FIRE AT A PHOTOGRAPHER'S STUDIO.—On Tuesday morning, at an early hour, a fire broke out at 77, Cornhill, tenanted by Mr. W. Roberts, a photographic artist, and adjoining premises. The damage done is very considerable, and is thus officially reported:—"Middle rooms on third floor burnt out; middle rooms on second floor severely damaged by fire; back rooms on second, third, and fourth floors damaged by heat and smoke. Cause of fire and insurances unknown."

NEW SOURCE OF CITRIC ACID.—Professor O. Silvestri, of the University of Catana, has recently discovered a great quantity of citric acid in the fruit of the *Cyphomandra betacea*, a plant belonging to the family of *Solanaceæ*, which is found here and there in the gardens of Sicily. It is indigenous to Mexico, and has spread itself into Peru and other parts of South America, where it is called *Tomate de la pax*. It is a woody plant, and attains to the height of 4 metres. On analysis the fruit gives from 1 to 1·5 per cent of pure citric acid. This acid, which probably exists also in our edible tomato, has already been discovered by Bertagnini in the potatoe, and will doubtless be found in all plants belonging to this tribe.—*Cosmos.*

PHOTOGRAPHS OF GREAT MARLOW.—A correspondent, Mr. J. H. Jewell, of Westerham, will be obliged if any of our readers can inform him of the existence of any photographs of Great Marlow and the neighbourhood, card size by preference.

PORTRAITS IN TOMBSTONES.—The practice of affixing portraits to tombstones appears to be gaining ground. Mr. Walter Petly a few days ago received a commission to paint a photograph in oil to be employed for this purpose, a water-coloured impression having been destroyed by the exposure.

A NEW LIGHT.—A new system of manufacturing gas and supplying dwellings therewith is now in course of introduction into Canada. The process, we believe, owes it origin to American ingenuity. We are so habituated to connect the manufacture of gas with furnaces and coke-producing ovens, that it will astonish our readers to be told that no fire is used in any form to produce the new article. On the contrary, the works are immersed in water, and seemingly the only trouble will be to keep out the frost. We may tax the credulity of our readers when we assert that, in order to secure a supply of gas extending over twelve months, all that is necessary is to make the receiving vessel roomy enough to hold the requisite quantity of the raw material. That material consists of the refuse of petroleum works, and is known as gasoline. Its value hitherto has been slight. The works consist of a strong cask, some eight feet in diameter by ten feet in depth, inside of which is another cask some three feet in diameter by the same depth. The smaller vessel is raised to the level of the larger one, which is filled with water, and rises a few feet above the surface. An outside sheet iron case, like a miniature gasometer, covers the large cask, and can be elevated to hold the quantity of gas proportioned to the works. The piping is similar to that employed in ordinary gas works. The natural inquiry of any who see the simple machinery we have described is to know how the gas is generated. The process is the simplest imaginable. A pipe, with the end perforated, enters the smaller cask, and reposes at the bottom thereof. At the other extremity, and outside the works, the pipe is connected with an air-pump, and when the smaller cask has been filled with gasoline, and the atmospheric air is injected through the pipes, it rises through the gasoline in the form of bubbles; in other words, the atmospheric air, being forced through gasoline, assumes the nature of gas, and that gas burns as brilliantly as that produced from bituminous coal. It is obvious that the cost of lighting a house is reduced to a minimum when all that is needed is a barrel of gasoline and an air-pump. This invention will be of inestimable service to country villagers and individual proprietors, as the cost of lighting premises will be less than entailed by candles, coal oil, or coal gas, and the the risk of explosion must be very much diminished in consequence of the mode of manufacture. We believe that gas made in the manner we have described is inodorous. This may be considered an objection, as an escape cannot be noticed with the same certainty as with the odorous gas coal. We have thus almost a certainty of cheap light at a cost much below what that essential article now entails upon us.—*Montreal paper.*

To Correspondents.

Senrab Egroeg.—In the article by Mr. Hughes in our Year-Book, to which you refer, where he states that he has frequently kept a plate three hours between sensitizing and developing, he clearly means that the plate has been kept three hours after it has left the bath of distilled water. If you read the preceding sentence you will see this, for he remarks that it is surprising how long a plate will remain "uniformly moist" "when it is wet with little but plain water." The plates can, of course, be carried to a distance if, as Mr. Hughes further adds, "the usual means of preventing evaporation be adopted, such as putting a thick pad of wet blotting-paper behind the plate, and a sheet of oiled silk, or other waterproof material, as well." One of the chief difficulties, ordinarily, of keeping a plate long between exciting and developing is the concentration of the free silver on the surface of the plate, causing stains. When the free silver has been removed by washing, no such danger exists, and if care be taken to prevent the film actually drying, the plate may be kept a long time, as you will doubtless see.

W. H. J.—We have not heard of any one who has tried the process. 2. Equivalent to glacial acetic acid, we believe; but it is a commercial term, descriptive of a quality commonly used.

G. E.—There is no work in print devoted to enlarging. It would be impossible in this column to give you instructions how to construct enlarging apparatus, and how to use it. There are various modes of enlarging described in our back volumes and in our Year-Books. If you select a method and proceed with it, we can answer any special question relating to it in this column. First determine the method you wish to use, and then we may give you hints how to proceed.

An Amateur.—You may safely use the bath after the treatment you describe. 2. The lenses of the maker you name are generally pretty good. 3. You may keep bromo-iodized collodion for many months, of course keeping it properly stoppered and tied down. As a rule, it is best to keep it in the dark. 4. Pinholes arise from very many causes, but the most common cause is the saturation of the bath with iodide of silver. To get rid of this, add the silver bath to an equal bulk of distilled water, and filter out the precipitate formed. Then add sufficient nitrate of silver to make up to the proper strength.

H. R. (Openshaw).—There is no mode in which the spots on the half-plate picture can be removed from the negative; but, with care, they may be touched out of each print so as to scarcely show. The spots have the appearance of having been caused by drops of water standing on the plate and condensing the light. 2. There are various modes of vignetting. One of the best, because it admits of the greatest variety of effect, and produces the least formality of shape, consists in the use of a piece of card with the aperture graduated by means of cotton wool. The vignetted print is pretty good. Perhaps the shade is a little heavy for a vignette, which usually requires to be more delicate in effect than a fully printed out impression. For vignettes a lighter background is desirable. The tones generally are pretty good. Those you have marked "acetate bath" are best; but the negatives are also probably the best. Much depends on circumstances as to the number of prints which can be toned with a given quantity of gold. From one to three sheets of paper may be toned with a grain of chloride of gold. 4. Of the makers you name we prefer No. 1.

Bromo.—We have not seen any description of the form of tent used in the Abyssinnian Expedition. Probably the maker, Mr. Meagher, can inform you.

Citric Acid.—If the spots in question arise with one bath, and not with another, it seems tolerably clear that they are due to the bath; and this is the more probable seeing that pinholes are also produced by the same solution. These, and the sandy-looking deposit, suggest that the bath is supersaturated with iodide of silver. Dilute the solution with an equal bulk of water, filter, and add nitrate of silver to make up the strength. 2. The annual subscription to the North London Society is 10s. 6d. There is no entrance fee.

B. Atkins.—The engravings you mention—"Eastward Ho!" and "Home Again"—are copyright.

Pica.—If you place a negative in the place of the ground glass, and turn it towards a strong light, you ought to be able to get a good and sharp image on a screen placed at the proper distance. The negative should be turned towards the northern sky, not to direct sunlight, and care, of course, is required in adjusting the distance of the lens from the negative and from the screen. There is no work on enlarging.

Amateur.—No. 1, of six inches focus, will probably answer your purpose best. You will see that on the amount of washing the degree of sensitiveness depends, and that the shorter the immersion in the nitrate bath the longer the washing needed, and *vice versa.*

"Look-before-you-Leap."—We have not yet had an opportunity of examining the albumen colours, but intend to do so shortly. 2. The Carrier paper is exceedingly useful for very vigorous negatives. Its tendency is to give less vigour than ordinary albuminized paper, and therefore, with soft negatives, the prints are a little feeble. With very vigorous negatives it gives good results, and it is very useful to have in stock, as we find no deterioration on keeping.

James Maycock.—The prints you forward are excellent examples of the oxymel process. The print on the wrong side of albuminized paper is very good; but if printed a little more, and toned a little less, it would have been better still. The tendency of albuminate of silver under the action of light is to assume a brown tint; that of the chloride of silver to assume a violet tint; hence the treatment which would give a warm print with albuminized paper will give a cold effect with plain paper. To get a warm tone, use a weak or old toning bath, and be careful not to over-tone. 2. It is difficult to speak of the peculiarity of Adam-Salomon's pictures as due to any one thing. They are especially distinguished by fine light and shade, good posing and composition, fine modelling and great relief, combined with much delicacy. They are also exceedingly rich in colour. 3. Copyright in books extends for forty years, or during the life of the author, and for seven years after his death.

J. H. Johnson.—In the double chloride of gold and sodium, chlorine, gold, and sodium are combined in their equivalent proportions; in a solution of gold in nitric and hydrochloric acid made neutral by the addition of carbonate of soda, you have the same thing, plus nitrate of soda and excess of chloride of sodium. Such a solution, however, generally answers very well for toning.

J. H. Jewell.—We do not know of any views of Great Marlow in existence. 2. You will find in our Year-Book just issued some hints on the testing of cards for hypo.

Oe (Truro).—The soft crayons supplied by any respectable artists' colourman, such as Newman, of Soho Square, will answer best.

Schuttz.—The Photo-relief Printing Establishment is at Hereford Lodge, Brompton. We have no doubt that you will obtain permission to visit the works if you write to Mr. Woodbury. Cards are issued admitting on certain days, we believe.

George Hooper, Fred. Kirby, J. Roberts, and several other Correspondents in our next.

Several Reviews and Articles in type are again compelled to stand over until our next.

Photographs Registered.

Mr. G. Barber, Derby,
Photograph of the late Miss L. A. Pickering.

Messrs. Galbraith, Jennings, & Co., Belfast,
Two Photographs of Miss L. Willmore, as the Peerless Statue in "Pygmalion."

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

PATENT OFFICE

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 543.—*January* 29, 1869.

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PHOTOGRAPHIC SECRETS.

In some correspondence in another column a subject is discussed in regard to which we should have scarcely thought it possible two opinions could have been maintained. Referring to Mr. Cherrill's recent able and comprehensive paper on combination printing, read before the Photographic Society, Mr. Hooper questions the policy of giving publicity to the manipulatory details, or "little dodges," by which several negatives are printed with facility and accuracy, so as to produce one harmonious picture; and adds, in regard to "dodges" generally, that "most professions have their secrets, to which it would be unprofessional to give open expression," further adding, that "it is a great truth" that "photographers do not tell all they know."

Is this a "great truth?" Is it a truth at all? Or, if a truth, in any case, is it one upon which photographers can congratulate themselves? We think that with very slight qualification an emphatic "No" will be the response to each of these questions. In no art has communication been so free or so universal; in none have such facilities for communication existed; in none have the facilities been so generally and unreservedly embraced; and in no art, we believe, in the history of the world, has the freedom of inter-communication so rapidly and so copiously yielded fruit in the stupendous growth, wide-spread application, and rare perfection attained, in an existence little more than a quarter of a century.

Photography owes almost everything to this constant and unreserved inter-communication of ideas. By means of photographic societies, which sprung up into active existence in all directions for the sole purpose of this inter-communication; by means of journals devoted chiefly to the same end—two agencies without their parallel in extent, if not in kind, we believe, in the history of any other art—photography has attained its present position as a science, an art, and a branch of industry. Its every phase has been the subject of this inter-communication: its physical and chemical laws, its minutest points of practice, its relations and capacity as pictorial art. Every class of society has taken part in this inter-communication: the ablest chemists and physicists, from Sir John Herschel downwards, have contributed freely both to its science and practice; royal academicians have not disdained to contribute "dodges" whereby better art qualities might be obtained; professional photographers and amateurs alike have given freely of their treasures of experience; and the humblest operator has often done good service by adding his hints on manipulation to the common stock of knowledge. There is not a professional photographer in existence who has not profited by, and is not indebted to, this inter-communication, the general result of which is now so common and wide-spread, that, like the air we breathe, it sustains life, almost without our consciousness of its existence.

We believe that the allegation that "photographers do not tell all they know" is, as a general statement, utterly untrue. The majority of photographers, and pre-eminently the best men, do tell all they know, and are well satisfied that success does not depend upon secret dodges. It is to professional photographers, if to any one, that secrets should be of value; and who are the professional photographers who have most emphatically declared that they had no secrets to hide, and who have most courteously and willingly, in private and in public, communicated every detail of their mode of working in their professional speciality? Men like Williams, and Mayall, and Hughes, and Robinson, and Rejlander, and Bedford, and Blanchard, and England, and Mudd, and a host of others whose works add lustre to the art, have repeatedly stated that they had no secrets. One of the most distinguished of these gentlemen some time ago commenced a communication to our pages by disclaiming the possession of secrets, and desiring to "give especial emphasis to the fact that success in photographic portraiture is not due to the possession of occult formulæ, or to the employment of secret methods, but simply to the judicious application of the information open to every one." The most sucsessful men know that secret dodges would avail them little: they rely for success upon the right application of the common stock of knowledge, personal skill, and constant care: upon, in short, the use of brains. Who are the men who have secrets, and rely upon occult dodges? Generally the least competent and least successful in the profession. Of what do their carefully guarded secrets consist? Generally of something absurd and worthless, or of something which has been published in the journals which they have never read. Two examples occur to us: the first was the belauded secret of a very secretive printer, the tones of whose pictures were very good. When communicated in the strictest confidence, it consisted in adding a *pin* to the toning solution! In the second case the secret was costly. The late Mr. Lucy purchased, after seeing some charming prints in Paris, a secret recipe for the toning bath, for £20. Some time afterwards he communicated the formula to us; when we at once pointed out that it was as nearly as possible identical with one published some time before in the Photographic News.

One word of qualification is possibly needed here. There are secrets which are not published, secrets of value, and retained by good men. But these are all of a special kind. They chiefly consist in some special process, and have cost time and money in working out. They do not generally affect the photographic community, nor the art generally. If published, they might impoverish the originator, and would only enrich, at most, a dozen of his competitors in a special line: it may be for a method of enlarging on canvas, or a formula for a varnish, or a mode of enamelling. In most of these cases the retention of the secret is quite justifiable. The distinction we here make between two classes of secrets was recently illustrated by a communication from Mr. Henderson. This gentleman has discovered and worked out an excellent method of producing enamel photographs. This is a matter of a commercial character, valuable to its possessor, but not affecting the general interests of photographers. Incidentally, in the enamelling operations he discovered a new and valuable method of intensifying, and at once making the distinction, he regretted that he could not give this process of general value to the community, because of its complication with his enamelling secret.

But Mr. Hooper would not "advocate secrecy in anything that would be of value to the art itself." We submit that the manipulatory details of an operation like combination printing, and the mode of registering the positions of different negatives, are of great value, as we know they are matters of much interest to photographers. The discussion as to the mode of producing portraits with natural backgrounds, like those of Mr. Edge, and the various suggestions for producing a similar effect, sufficiently attest that the subject deeply interests photographers generally.

The ground upon which Mr. Hooper deprecates the publication of "dodges" is, that a knowledge of them may lower the art in the eyes of the public. There, again, we must take distinct issue. Any "dodge" the publication of which will tend to lower the art is of a character, we submit, that its practice, either secretly or openly, will lower the art, not simply in the eyes of the public, but in fact. We strongly protest against the ideas of legitimacy which resemble those of the virtue which Iago ascribed to certain Venetian ladies, whose best conscience was "not to leave undone, but to keep unknown." A practice which, made known, will lower an art, will, if practised in secret, undermine the art and degrade the artist. Whatever a photographer feels justified in practising, he may, so far as his concern for his art is in question, freely discuss amongst his brethren, and should have no fear of the interest of the general public in the matter, and still less of that of the petty critic whose narrow and distorted vision generally creates the faults he finds happiness in denouncing.

In Mr. Cherrill's paper the only illegitimate "dodge" described was the introduction of the sham rock in the foreground, and in describing this as illegitimate, we must qualify. It was illegitimate *quoad* art undoubtedly; but its legitimacy as a trap for pretending critics is altogether another matter. We knew of the ruse when the picture was exhibited, and smiled to notice how a real untruth and trick escaped unnoticed, whilst fancied defects were insisted upon. We believe that Mr. Robinson would be the last to adopt or defend the use of one thing to represent another in art photography. He has always gone straight to nature for his effects, as a rule, avoiding the aid even of the *costumier*. We feel satisfied that he would not agree with Mr. Hooper that "photographers may use a piece of earth for rocks, or even coals from the cellar," provided he keeps the "dodge" unknown, and the fact that on the one occasion on which he has used such a "substitute for truth," he proclaims it, and states that it was a trick, and not art, satisfactorily proves his disapprobation of such "dodges" for pictorial purposes.

We have devoted more space to this question than at first it seemed to require, because we feel that two vital principles are involved: First, the importance of maintaining free communication amongst photographers; and, second, the importance of maintaining the reputation for truth which photography possesses, not by avoiding the publication of "dodges," but by avoiding the use of "dodges" in secret, which would degrade the art if practised openly.

THE LIMITATIONS OF MR. SWAN'S CARBON PATENT.

SOME further comments on this subject by our esteemed correspondent, Mr. Blair, will be found in another column, and one or two more words on our part seem necessary to make the actual position of affairs—or, at least, what we believe to be the actual position of affairs—quite clear. First, let us be distinctly understood as speaking our own views on the question only, and it is possible that in defining the limitation of the claims of the patent we may have regarded it as less comprehensive than the patentees intend it to be. We have no knowledge of the precise views of the Autotype Company in this respect. Our simple aim was to present clearly our own views upon a subject to which we have devoted much attention. We have no interest but the public interest, and our advocacy, if any were needed, would be of course devoted to the interests of the public, so far as these could be secured compatibly with justice and honesty. But we should scarcely serve the public if we in any way undermined their confidence in such portions of a patent as we had reason to believe valid, and so betrayed them, on the one hand, into risks which might prove costly; or, on the other, induced dissatisfaction as to the operation of restrictions they could not remove.

Our immediate purpose is, however, to add one word more explanatory of the *thing* we spoke of in our last as covered by the patent, namely, a transfer tissue. Mr. Blair points out that paper has been coated with pigmented gelatine before, and that paper so coated with pigmented gelatine constitutes this transfer tissue. But it must be remembered that the patent laws do not provide protection for a *new* thing only, but for an *improved* thing; indeed, the bulk of the patents taken out are for *improvements.* Now, if we understand the matter aright, a transfer tissue was not only an improved thing, but a new idea. The aim in preparing paper with gelatine and pigment before was to secure the thinnest even layer possible, and the more firmly it could be incorporated with the surface of the paper the better, as it was never intended to be removed to any other resting-place. In Mr. Swan's tissue the paper is only a temporary basis, and it is an imperative condition that the layer of gelatine shall be so thick that, after printing, a substratum of perfectly soluble gelatine shall remain in contact with the paper, permitting its easy removal on the application of warm water. When the idea of a paper transfer tissue was first mooted in a communication to our columns in June, 1864, by Mr. Wild, it was suggested that before applying the carbon compound the paper should be treated with dextrine or some similar substance, as it is in lithographic trasfer-paper, so as to secure the ready removal of the temporary basis of paper. Mr. Swan at once wrote to say that he had been for some time engaged in experiment on this kind of transfer tissue, and enclosed a sample of it in his letter, adding, also, that it was already included in his patent. Instead of employing an intermediate layer of dextrine, starch, &c., to secure the easy removal of the paper, he found that a thick coating of gelatine answered the same purpose. This transfer tissue, then, seems to us a new thing and an improved thing. We had certainly not heard of such a thing in connection with carbon printing before the time we have mentioned. Such a paper tissue as was used before can be used still in precisely the same manner. It seems natural enough, we know, to say, Why may I not first make this slight improvement of applying a thicker coating of gelatine, so that I can transfer it after? The answer is, Simply because that slight improvement with that new intention, upon which so much depends, is one of the points for which a patent was obtained. But all that really belonged to the old method still remains open to the public,

In like manner, the *method* of mounting for development appears to us to constitute, unquestionably, a patentable improvement on M. Fargier's plan. It makes all the difference between a practicable and an impracticable process. M. Fargier's process never assumed any commercial importance, and we believe that it never could have done so. But it is scarcely important to discuss this point, since to all who think it sufficiently practicable, Fargier's method ramains open, and may be practised without let or hindrance.

Another question is raised by Mr. Blair and by another correspondent, into which we cannot enter now, namely, the scope and bearing of Mr. Edwards's patent. We are uncertain at present of its precise intention, which can be best explained by Mr. Edwards himself. In any case, it would be premature and unfair to discuss it until some more definite announcement of its aim is made.

DE OMNIBUS REBUS ET QUIBUSDAM ALIIS.

No. I.

BY NELSON K. CHERRILL.

Coming Events—Washed Wet Plates—Plain Paper Prints—Permanency of Carbon Prints—Possibility of Art Photography.

"Coming events cast their shadows before them." So at least it has been said, but the truth or falsity of the statement varies with the nature of the event referred to.

Photographic events too often shed more light before them than they leave after them; in this respect they not a little resemble comets, whose nature seems to enable them to make a very long tail out of a very little matter.

It is lucky for photographers generally that this expansive tendency meets with a yearly check at Christmas, when, under the mighty blows of official condemnation, our Editor reduces the unwieldy mass of needless information to the compass of the most useful book about the art, the Year-Book. Yes; it is lucky for us that we have all we know condensed every year into a convenient bulk. Without this delicious little work, where should we be? I often wonder where the Editor is after his exertions. Fancy the beating and the pounding needed to get the sense of a six column article down into a line! I can quite fancy

"—— a smaller man,
A Launcelot, or another,

being simply lost in his endeavour to extract sense enough from his writings during the year to fill a page, much less a book. But our Editor is made of different stuff. See how, after all his exertions, he calmly reviews the position.*

"The annals of photography during the last three or four years have been singularly barren of great discoveries." What an exquisitely delicate satire this, and how beautifully suggestive of the cometary style of events in photographic circles!

I was going to speak of "coming events"—perhaps I will do so—but as these are always more or less mixed up with what have gone before, I shall touch lightly upon a few simple matters which I have lately seen and heard, and give from them what are my anticipations of the not very far distant future.

Turning over the leaves of my Year-Book, I had not gone far when I met with a very simple matter, worthy of very much attention. I refer to a lucid paper, by Mr. Jabez Hughes, on "Washed Plates." Very simple: you only plunge the plate into distilled water, instead of putting it direct into the dark slide; thus modified, your wet plate will keep wet for hours, and, what is much more important, will not need any longer exposure than if it had been used at once. No very especial precautions seem to be needed to ensure complete success. I have tried the experiment—roughly, it is true, but perhaps all the more efficiently for that. A plate prepared according to instructions was sent for a two-mile walk in the hands of an assistant, and on its return was developed into as perfect a negative in every respect as could be desired. I have thus early seen quite enough of this process, and feel very glad I have no commercial interest in patent tents, for I think that the more or less general adoption of such an eminently simple and efficient preservative process, if it does not supersede the use of tents, will, at any rate, for views near home, somewhat interfere with the supposed usefulness of those cumbrous and unwieldy machines. I would remark that the calm, quiet, and simple manner in which this process has been brought before photographers will go a long way to make them believe in it. I think Mr. Hughes has cast a shadow before, and the event will be found in the cordial adoption of his simple but efficient process.

There has not been much said of plain paper printing lately, but the little has been in that peculiar style which seems to betoken more in the speaker's mind than he cares at the moment to divulge. Mr. Bedford showed a few fine specimens at the North London. A short and unusually desultory conversation ensued; a few remarks in the paper, and, as some might say, all is over. Not so, however; all is not over yet. The subject is too important to let drop in a hurry. Photographers have long known, to their disgust, that albuminized paper prints are not to be relied on for permanency. And what have they been waiting for the last two or three years? Something better? Well, we shall see; but in the meantime, it is alleged that plain paper printing can easily be made much more permanent and more certain in this respect than albuminized paper printing. This may be a matter of experiment, and not difficult to ascertain. I should not be surprised to see a good deal of attention given to the subject this year.

The other day I was looking over one of the finest printing establishments in the country, when I came across two carbon prints very elaborately *dated*, and hung up as if for some extraordinary experiment. I both felt and looked surprised, and asking what it meant, was told they were being *tested for permanency*. "Why," said I, "I thought carbon was the most stable material under the sun!" "So it is," was the quaint reply; "but *paper is not*, and we find the high lights of carbon prints very apt to turn *yellow* by exposure to the light." I was sorry for this. I hope it is not a "shadow," as, if so, the "coming event" will be rather serious for some one.

I think that, amongst other things, a few neat little observations which have been made in the outer circles respecting the art position of photography will not be without their influence this season. If anything can serve to stir up the capacity of photographers to greater exertions—anything, at any rate, in the way of cool contempt, I think the following from the *Gentleman's Magazine* would about do it:—"The best evidence of the impracticability of producing art photographs is, that of all attempts that have been made in that direction, no one has exhibited the germ of success." Cheerful, this; but especially so for those critics who find fault with everything. Here is a fair field, and certainly no favour. Would it not be a great event if some of these gentlemen would favour the world with one or two of their own productions this year? I am afraid "this event will not come off," as they sometimes say when speaking of what is facetiously called the "high jump" at athletic sports.

I think that the event of increased vituperation on the part of the ignorant critics is already throwing its shadow over the face of things, but I do not see any corresponding inclination on the part of these gentleman to illustrate their opinions by practical work superior to those they condemn.

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* Our readers will probably pardon Mr. Cherrill, as we do, for his good-natured badinage.—Ed.

PHOTOGRAPHY IN HOT CLIMATES:

ESPECIALLY ITS EMPLOYMENT FOR TAKING VIEWS OF BUILDINGS AND DARK INTERIORS.

BY DR. H. VOGEL.*

The Silver Bath was a source of much trouble to us when we were working in the desert. The high temperature soon saturated the bath with iodide of silver, which, in connection with nitrate of silver, falls to the bottom in the form of crystals of iodide and nitrate of silver. When such was the case, the plate appeared very pale and insensitive, since a compound of iodide and nitrate of silver is much less sensitive to light than pure iodide of silver alone. At another time, after being developed, the plates seemed to be covered with yellow dust.

Six years ago I demonstrated that high temperature favours the precipitation of iodide and nitrate of silver in a nitrate bath (see PHOTOGRAPHIC NEWS, Vol. VIII.). The only means of avoiding this evil was cooling the bath, a method very easily practised on our continent, where it is not difficult to get ice. Cold water and ice, however, are things unknown in Upper Egypt. Here we are obliged to operate in quite another way. The bath was put into an untransparent wet bag, on which always water was poured. By this means we had a temperature of 18° R. (72·5° Fah.), which permitted things to work well. Another fatality arose from the organic substances, which spoiled our distilled water, and likewise the products of decomposition, which may be found in all samples of collodion. Their presence in a bath was announced first by stripes, which did not even disappear after long immersion, and afterwards by fogs and great insensibility. The organic substances seemed to facilitate the precipitation of crystals of iodide and nitrate of silver, for, in spite of cooling, even new baths, those crystals appeared after about eight plates had been prepared in the bath. At the same time the bath received a bluish colouration.

Under such circumstances permanganate of potash was the only remedy. After each day's work the bath was repaired with this salt, and was then found to work admirably. Sunning the bath answered not nearly so well, and much more slowly. It is sufficient to add for this purpose to the bath, drop by drop, a 10-grain solution of permanganate of potash until a rose colour appears, which does not disappear immediately by shaking, but after some minutes. After each restoration with permanganate of potash, a drop of nitric acid was added to the bath. For the above-mentioned reasons, fresh baths were iodized as weakly as possible.

I used for the silver bath†—

Nitrate of silver	80	grammes
Water	1,000	,,
Solution of iodide of potassium	10	cub. cents.
Nitric acid	3	drops.

The plates must stay as long in the bath until streaks have disappeared totally. With long exposures it is necessary to place some wet paper on the back of the plate, and to secure its lower edge in the dark slide with long strips of blotting-paper.

Developed and intensified as usual. An employment of additional acid will be of great service, especially if blue fogs appear during intensifying. Our developer consisted of—

Sulphate of iron and ammonia ...	7	parts
Acetic acid (glacial)	4	,,
Ordinary water	100	,,

The mixture was filtered.

The double sulphate keeps longer than ordinary sulphate of iron, and is therefore to be recommended to travelling photographers. Our intensifying bath was—

a.—Solution of pyrogallic acid (1 part pyro, 10 parts alcohol) ...	4	cub. cents.
Distilled water	100	,,
b.—Silver salt	2	cub. cents.
Citric acid...	34	,,
Water	100	,,

We fixed with cyanide of potassium.

Point of View and Illumination.—So far, I have only treated of the technical points of our working. Very important also, however, is the choice of the point of view and a good illumination. In this respect the difficulties were increased by the circumstances that in the narrow tombs no sufficient space was found to secure the necessary distance from the object, that one piece of architecture covered the other, and that the ground, covered with fragments of all kind, did not offer any secure station for our camera. Very difficult, too, it was to get a proper illumination. In southern regions the sun rises very rapidly, and from eight to ten o'clock in the morning it keeps already a point at which it does not arrive in England but at noon. From that time no satisfactory result is to be hoped for, because the rays come down almost vertically, and give too great a contrast of light and shade. Therefore, the best time for working in the open air is in the morning up to ten o'clock, and in the afternoon from three to five o'clock, as far as the heat allows working at all. Particular caution is to be taken if hieroglyphics and flat relievoes are to be photographed. They give only well relieved images if the sun's rays are coming down upon them in an inclined direction. In the most cases the most favourable time for their illumination was but a very short one. The time of the most favourable illumination can be stated previously without any difficulty if the compass is at hand, the operator having some astronomical knowledge. In diffused light it is very difficult to get a picture of the hieroglyphics with proper relief. Short exposure and great experience will alone secure good results.

The chief task of our expedition being to take documentary inscriptions and paintings, the architectural element did not enter our programme. Such expeditions, however, which propose to direct their attention especially to architectural objects will do well to provide for a number of scales, which are placed near the object and photographed with this. A great necessity to such expeditions is also Meydenbaur's photogrametrical camera. The Egyptian expedition, which was projected when the astronomical one was already on the journey, could not, therefore, be furnished with those articles, and was therefore obliged to be contented with such apparatus and facilities as were provided for the astronomical expedition.

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PLAIN PAPER PRINTS WITH A PRESERVATIVE SURFACE; EQUAL, ALSO, IN APPEARANCE, TO ALBUMINIZED PAPER.

BY T. ROBERTS.

[THOSE of our readers who were able to attend the late Exhibition in Conduit Street probably noticed some reproductions and other pictures, by Mr. H. Dixon, with a very highly-glazed surface, almost resembling French polish, which was described as affording a most certain preservation to the picture. For some purposes the treatment was undoubtedly effective, and an account of the *modus operandi* will be interesting to our readers.—ED.]

After the prints are washed and dried as usual, take some clear size made from parchment cuttings, which, when quite cold, is of the consistence of calve's-foot jelly, but should be used just warm enough to be melted. If the prints are unmounted, immerse them for one minute; if mounted, lay on the size with a broad camel-hair brush, and hang up to dry in a warm place free from dust, as every speck will show when finished. When quite dry, take a piece of cotton wool and pour on it a quantity of white French polish; over this place a piece of cotton or linen rag; rub on a drop or two of linseed oil; another piece of rag over this completes the pad with which to rub the print. This should be done in a circular direction, replenishing with more polish as required, and finishing off without the oil, but with a little methylated spirit added to the polish instead. Finally, finish the polishing with a pellet of dry cotton wool.

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* Continued from p. 41.

† This bath is in effect a 35-grain nitrate solution, with about half a grain of iodide of potassium and 1 drop of nitric acid in each 12 ounces.—ED.

The clear size must be used quite fresh, as in a few days it goes watery, when it is useless.

The prints are best touched-out after sizing.

Prints coloured either in water or oil will polish quite as well as plain prints, water-colours being made to appear very much like oil.

It adds force and brilliancy, and brings out detail. It is impervious to damp; can be applied to both sides of the photograph before mounting, so that no ordinary outward influence can afterwards affect it; and can be renewed at any time.

The photographs exhibited by Mr. Henry Dixon, of Albany Street, at the exhibition in Conduit Street, last November, were treated in this way.

If the prints are coloured in water, the best way is to pour the sizing on like collodion; there is then no fear of starting the colours.

January 12th, 1869.

ON SUCCESS IN DRY-PLATE PHOTOGRAPHY.

BY A. DE CONSTANT.*

Why is it that, nothwithstanding the great recommendations of their projectors, many of the dry-plate processes are very short-lived? They are taken up and tried, and then, on the first mishap, again relinquished. Is it possible to mention any one method which has given satisfaction to all, and which, on account of its simplicity and certainty, could be adopted in general practice, like the wet process? That is to say, is there not one single dry-plate process which on every hand would be deemed a good and reliable one?

It may be supposed that everybody who openly makes known a process has obtained satisfactory results by its means, for there are a great many photographers, and even manufacturers of dry plates, who daily prepare and employ plates by one process or another with such certainty, that in their hands they rival those of the wet collodion process. What is the secret of this success, and what is the reason that in our hands we find that stains and faults of all kinds always accompany our dry plates, and tend to throw discredit upon the process?

For a very long time I have been one of those unfortunate individuals who look for the source of failure in the process instead of in themselves. At the present time, however, I can perform my work with great certainty, and a large number of dry processes which I have experimented with have all furnished me with good results. It is therefore easy for one in my position to enumerate the circumstances by which this fortunate change of affairs has been brought about, and I do this the more cheerfully because I know I am doing a service to those who have hitherto been unsuccessful in their efforts. At the same time one must not expect to hear of a new method of operating, or of extraordinary directions laid down for guidance, for the whole secret lies in a few details only, such as the composition or quality of the collodion, and the washing and drying of the plates. I shall confine myself to narrating my *modus operandi* in regard to these three things.

Everybody knows that clean plates is the first requisite of the photographer, and that in many of the processes a preliminary coating is indispensable to give solidity to the collodion. In all methods this substratum may be used with advantage, as it imparts the elements of certainty and cleanliness during development. As gelatine invariably contains impurities of some kind, and as it is difficult to find sufficiently pure benzole for the preparation of india-rubber solution, I prefer to use white of egg for this purpose, the latter being beaten up and filtered, and afterwards diluted with twenty to thirty times its volume of water. Diluted to this degree it is still sufficiently effective, and, at the same time, gives rise to fewer air-bubbles, and is also more easy of application to the plate; the latter operation being facilitated by the employment of a glass rod. If a small quantity of ammonia is added to the albumen, the latter will keep good for a considerable period.

Every photographer must possess a suitable sensitizing bath. For employment with the bromized collodion (an article I strongly recommend) it should be of ten per cent. strength, and acidified by means of nitric acid, the plates being allowed to remain in the bath for at least ten minutes; this period is necessary, in order that the whole of the soluble portion of the bromine salt may be converted into bromide of silver.

After these trivial, although necessary remarks, I will proceed to discuss the three questions above-mentioned.

1. *The Collodion.*—When we remember the manner in which collodion is generally prepared by the majority of photographers—viz., in small quantities and with all kinds of, and often inferior, gun-cotton, and also with alcohol and ether ill-suited to the purpose; and when we take into consideration that the product so obtained is often employed before it has been allowed to settle for the proper period, it is by no means a thing to be wondered at that the working of such a material is accompanied by a certain degree of failure; and if we compare this mode of preparation with that which goes on in a regular collodion manufactory, where we find that the material is always produced from cotton of the same description, of which large quantities are kept in store, and from soluble agents of known quality, the finished product being allowed to stand for months, and sometimes even for years, to settle before it is carefully decanted, does not our own common sense tell us that with such a collodion good results must ensue? while that which I will call amateur collodion, nothwithstanding the care exercised in the selection of formulæ and materials, must always prove to a certain extent unsatisfactory? I therefore advise operators, before everything, to furnish themselves with a good, well-known collodion; there are plenty of them in the market, and I, for my part, prefer Mawson's, to which I have to attribute my successful result. In accordance with the advice of several skilful English photographers, I add to every ounce of this collodion two grains of bromide of cadmium, which keeps very well; and in employing so expensive a collodion I remember that there is no worse economy than to produce bad results.

2. *The Washing of the Sensitized Plates.*—It is my belief that this operation has been much exaggerated, both as regards details and their duration. Thorough washing under the tap is, in my opinion, in every way as serviceable as frequent changes of water. After being taken from the sensitizing bath, the plate is well drained, and then immersed for a few minutes in a bath of filtered rain-water; it is then washed with ordinary water, by means of a tap to which is adapted a small linen bag, which acts as a filter. Finally, the plate is placed for a short time in a second bath of rain-water. By operating in this manner I have been invariably successful in producing clean plates, free from faults, even when worked with the most difficult process.

3. *The Desiccation of the Plates.*—Without enumerating the different failures which I have experienced, and which have led me to the conclusion that a proper method of drying cannot be too highly appreciated by photographers, I will confine myself to point the manner in which unsuccess-

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* *Photographisches Archiv.*

ful results may be avoided. As the atmosphere in a cupboard is generally colder, and always moister than in the room in which one works, the plate, as a matter of course, as soon as stored away therein, becomes covered with moisture, and thereby loses nearly the whole of its sensitiveness. If, in order to prevent this evil, or to hasten the desiccation of the plate, a current of air is made to pass through the box, the collodion dries too rapidly, the film is drawn together, and the whole of its sensitiveness vanishes. It will be seen, therefore, that a quick as well as a slow drying action is to be avoided. Again, if the plate is placed in a sloping position against the wall upon a piece of filter paper, as in the manner generally adopted, a dark stain is frequently formed upon that corner of the negative which has been in contact with the paper. This stain, which sometimes destroys a good portion of the negative, is due to the liquid from the plate not being absorbed by the filter paper (whatever may be its thickness), but collecting into a little pool or reservoir, from which it is drawn by capillary action again to the dried surface of the plate; by this means stains of various forms are produced, the cause of which was for some time unaccounted for.

These are some of the failures which are produced by an imperfect process of drying, and which I am able to avoid by pursuing the following mode of proceeding. In the dryest part of the dark room, at a fair height from the floor, I place a box in which a row of wooden laths, half a foot long, has been fixed at a distance of four or five inches from each other. The reverse side of the plates rests against these laths in the manner of books in a book-case, and below the plates, at a proper height, is fixed a single cross-piece; the latter is a piece of wood planed diagonally, so that the plates touch it at one point only, they being so arranged that the upper corner is supported by the side of the box, while the lower one is nowhere in contact. Thus the surface of the plate is everywhere free, the moisture dropping from the lowest corner being absorbed by filter-paper placed below it. In the box below the plates paper is also provided, and this is changed whenever necessary, so that every trace of moisture disappears. A little shutter upon the lid of the box is now pushed back, the opening being covered with yellow tammy, and thus the temperature in the box is kept on a par with that in the room without the establishment of any current of air. Plates dried in this manner preserve their sensitiveness, and always remain in a perfectly clear state.

By paying attention to these precautions, and keeping to the employment of Mawson's collodion, I have been successful in obtaining the most favourable results with a great number of dry processes with which I had on a previous occasion experimented and failed; and I may say that during the whole of last summer I worked with dry plates with as much certainty as with the wet collodion process.

If the question were put to me: Of the many processes that you have tried, which do you prefer? I should answer that my sympathy still goes with the coffee process, as it combines easy preparation, great cleanness in developing, and good preservative qualities; but its want of sensitiveness and the somewhat high degree of brilliancy which the half-tones exhibit have caused me to turn to the gum process, and more especially to the modification devised by Russell Manners Gordon, which, in regard to its keeping qualities, is equal to any, and which is particularly distinguishable on account of its great sensitiveness and the delicate artistic effects of its results. Nevertheless, I will not proclaim this process to be the best, inasmuch as I believe that for every operator that method is of the greatest value with which he is most familiar, and which yields him the finest results. For this reason I have made my practical suggestions applicable to all processes.

Further, it appears to me that a good photographer should be acquainted with several processes, for different methods possess different qualities, of which one ought to avail oneself for certain purposes. For instance, the gum process appears to me to be without a rival when the production of harmonious landscape pictures, full of delicacy and half-tone, and with perfect atmospheric effects, is contemplated; but for depicting architecture with clear sharp lines, when transparency and brilliancy are required, the coffee or tannin process, and more particularly the collodio-albumen process, would perhaps give better results.

For the reproduction of paintings, where a long exposure is necessary in order to allow time for the anti-photographic colours to become visible without obtaining polarized lights, I should prefer to use morphine dry plates.

Photography is beset with difficulties, as everybody knows; but few are aware that in the fight victory is secured more by means of skill than by force, and that what we generally denominate *minor details* often constitute the whole secret of the success which attends the skilful photographer.

PHOTOGRAPHY AND THE MAGIC LANTERN APPLIED TO TEACHING HISTORY.

BY SAMUEL HIGHLY, ESQ., F.G.S., ETC.*

In January, 1863, just after the close of the International Exhibition, I had the honour of reading a paper before this Society on "The Application of Photography to the Magic Lantern Educationally Considered," on which occasion I demonstrated how every conceivable branch of science and art might be illustrated by lantern slides produced by means of photography in a manner that at once raised that toy of the nursery, the magic lantern, into a valuable philosophical instrument and educational tool. I pointed out how, by aid of the ordinary, the astro, the spectrascopic, and the micro-photographic camera, we made nature become our artist, and forced her to depict her wonders with her own pencil of light on our chemically-prepared glass slides; how in this manner truthful transcripts from nature were delineated by a faithful and an unbiassed hand, where detail was a *sine qua non*, and in a manner that the hand painter could never approach, much less rival, even if we gave him a surface four times the size of that employed by the photographer, which then would entail projecting apparatus as cumbrous and costly as that employed at the Polytechnic Institution, alike unsuited for the convenience or the pocket of the travelling educational lecturer. In the one case all the details of a microscopic object of the most complex structure, the crevassed range of the Mer de Glace, or the wide-angled landscape of the Falls of Niagara, may be depicted with every detail within a three-inch square with a fidelity which the hand painter could not rival, if he could equal, within a six-inch square.

Another point on which I strongly dwelt was the impressive character of a large photographic lantern picture, on which the lecturer could fix the attention of his class while describing the subject under discussion, as compared with the tiers of ordinary paper diagrams, over which the eyes of idle students listlessly wander.

The collection of slides then exhibited in illustration of the suggested system of instruction met with the strongest expressions of approval from the leading educationists of your Society, and the Photographic Society of Scotland at a future period awarded them a special silver medal.

There is one thing, however, that photography could not do—it could draw our pictures, but it could not paint them; the day may come, however, when even that apparent miracle may be accomplished, for, recollect, that great master in science, Michael Faraday, who has lately passed from among us—not great in age, but great in the esteem of men—has bequeathed to Mr. Warren De La Rue the Daguerreotype presented to him by Becquerel, whereon nature had reproduced a coloured figure from her own palette; and that precious specimen still exists, unfaded—a promise for the future,

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* Read before the Society of Arts, January 20.

The paper to which I refer attracted the attention of a young officer in the Russian artillery, an amateur photographer, who has since become not only a distinguished professor, but Inspector of the Military Colleges of Russia. With the courage of youth, he determined to introduce the thin end of the wedge into the old system of instruction, where he had the power to use it, in his own lectures on General History, by illustrating them with photographic slides and the lantern.

This notion is now *un fait accompli*, and I think it will be a step in the right direction, for though the lantern has been employed at institutions and in schools, it has never yet been used in colleges, and he would be a bold man who would venture to suggest to the Dons of Oxford or Cambridge the introduction of a magic lantern for illustrating the University courses on History. But why not? "Because it has not been done before" is not a sufficient answer in these days of rapid progress and wide reform. I think I shall be able to show you that by a well selected and carefully executed series of pictures from authentic data we may take the student back into time, and make him familiar with the aspect of the people of the various nations, their costumes, the buildings they erected, the chambers in which they lived, prayed, or died, the vases with which they decked them, the gods they worshipped (carved in ivory and gold and of prodigious size), their manners and customs, how they lived at peace and in war, their modes of attack upon an enemy, and in what grandeur they carried their illustrious dead to the grave. In thus appealing to the eye we establish a system of artificial memory, next best to the student having seen these records and relics of man's history on earth, in a manner that the most impressive, verbal, or printed descriptions could never convey to his mind; and so in these days, when a wider range of knowledge is expected from our educated classes, we may hope to establish a more rapid and impressive system of instruction, and of a kind not so likely to pass out of the student's mind after he has left school or college.

The time at my disposal this evening will only permit me to show you but a few examples, taken at random from the extensive series of designs that have been prepared to illustrate Col. Tchepelevsky's course of lectures on the "Manners and Customs of Nations, from the Earliest Historical Periods to the Present Day," and this is how it came about that I am able to place these specimens of what has been done before you. At the beginning of last year this gentleman travelled through the Continent to see for himself who were the best producers of photographic lantern slides. Germany, France, and England were visited. Many halves of stereographs of subjects of historical interest were purchased on the Continent, but I am happy to say he found that the reproductions required from the great antiquarian works were turned out better in England than on the Continent, not only as to the brilliancy and clearness of the plain positives, but in the very important matter of brilliant and transparent colouring. In fact, he found our continental neighbours curiously behindhand in all matters relating to the lantern as an educational instrument, excepting for experimental physics. I may here state that the beautiful transparent positives of Ferrier and Soulier, and other continental photographers, sold in this country for lantern use, are not specially printed for that purpose, but are the perfect halves of broken or damaged stereographs that are thus utilized, which accounts for the density of many specimens that come into our hands, and the unsuitability of others for colouring. The samples I furnished being approved, the necessary lantern apparatus was ordered and supplied, and in the autumn of the past year I received a commission to reproduce 120 subjects, mostly of an elaborate character. These had to be re-drawn in a special manner for the nature of the work in hand, negatives made, positives printed and coloured in duplicate, and to be delivered in St. Petersburg within two months. Considering that the order was given at the worst season of the year, from a photographic point of view, it became a matter of anxiety as to how often the November fogs would make themselves "a darkness that would be felt." However, nature, artists, photographers, and colourers being propitious, the work was accomplished, the works known as the best authorities on Assyrian, Persian, Egyptian, Grecian, Roman, and Mediæval history being ransacked to supply the necessary material, the officers of the British Museum courteously rendering me every facility for the artists I engaged on the work.

Before proceeding to show these views, I will give a rapid survey of what has been done in regard to lights and improvements in our projecting apparatus since the date of my former paper on this subject.

Sources of Light.—Many heads have been at work within the last five years, trying to discover compounds and forms of lamps that will give a great amount of light with the least amount of trouble and discomfort in preparation, to meet the requirements of amateurs who only require the lantern for occasional family use, or for those who are nervous as to employing the most powerful light-giving apparatus; others have been trying to obtain still greater power out of the oxyhydrogen jet, and simpler or safer ways of manipulation; and a few to secure the most intense light attainable by man, that should even out-rival and render him independent of Old Sol as a source of light, who too often hides his bashful face in this our favoured clime of England when we most want his assistance, and in this bold aspiration, almost as daring in thought as that of the builders of Babel, Wilde has been successful—for, from a pair of carbon points, ½-inch square, placed on the top of a lofty building, the light evolved was sufficient to cast the shadows of the flame of street lamps a quarter of a mile distant, upon a neighbouring wall; while at noon, on a clear day in the month of March, the direct rays of the sun took *one* minute to darken a piece of sensitive photographic paper; the light emitted at two feet from the reflector of this electric lamp darkened it to an equal degree in twenty *seconds*; and on a day in June, Mr. Crookes estimated that this electric light had three or four times the luminous and calorific power of the sun at mid-day, and this at a cost of only one halfpenny per hour, practical, not theoretical value, for the driving power of this giant induction machine of Mr. Wilde's invention.

Mr. Crookes further remarks that "it would be an interesting problem to calculate what would be the result of driving the 32 inch armature required for a 100-ton magnet, with (say) a 1,000 horse-power steam-engine. If the power generated by this machine did not at once burn up the working parts, dissipate the electric lamp and conducting wires with a mighty explosion into space, and strike dead all the attendants with one lighting flash—if it were at all manageable, and were put on a high tower—it would probably give light enough to make London by night considerably brighter than London by day."*

(*To be continued.*)

ON THE REPRODUCTION OF DRAWINGS WITHOUT A LENS.

A method of making photographic copies of drawings, in which the latter are used as negatives, is described in the *Philadelphia Photographer.* The method is that practised at the Treasury Department, at Washington, by Mr. Walker:—

The drawing to be copied should be made upon thin paper, or, what is far better, on good tracing-linen, care being taken to use perfectly black ink, or some other non-photographic colour possessing sufficient body to effectually exclude all actinic rays. Make the lines sharp and continuous, that there may be no breaks.

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* See "A New Era in Illumination," by W. Crookes, F.R.S.—*Quarterly Journal of Science*, October, 1866.

To make the negative.—Take good plain Saxe paper (salted), and make it sensitive as for a portrait. Dry thoroughly, and fume ten to fifteen minutes, or until the paper prints rapidly and uniformly of a rich purple black colour. Prepare the printing-frame with good plate glass, upon which lay the plain side of the drawing, and superimpose the sensitive sheet, bringing the two in close contact by any of the usual means. In direct sunshine an exposure of one and a half to two minutes will generally be sufficient to produce a fully timed negative. Care must be used not to expose too long, as thereby the fainter lines would become clogged and feathery. Wash away the surplus silver, tone rather lightly, and fix like any other print; after which wash very freely, and then hang to dry in such manner as to cockle as little as possible. This is the finished negative, quickly and cheaply made, and capable of reproducing an indefinite number of duplicates equal in size to the original drawing.

Positives with white lines, &c.—Positives with white lines on a dark ground may be readily made by placing the sensitive paper upon the plain side of the drawing, and in other respects proceeding as for making negatives.

To make the print.—Place the plain side of the negative next the glass in the printing-frame, bring the sensitive sheet in conjunction with the opposite side, and expose as with a glass negative.

To salt the paper.—Make a bath containing 2½ grains of muriate of ammonia, and 2½ to 3 grains of gelatine or white glue to each ounce of water (use hot). Immerse the sheets two to three minutes, and then hang in a warm room to dry.

To make the paper sensitive.—Brush lightly with a slightly acid ammonio-nitrate of silver solution 30 grains strong; dry thoroughly, and fume ten to fifteen minutes.

Toning, fixing, and washing.—To one gallon of water add 15 grains of chloride of gold and 15 grains of chloride of platinum made neutral with carbonate of baryta; mix thoroughly, and set it in the sun or some warm place four of five days to ripen before using. This is the stock solution. Two or three hours previous to toning, add 1 grain of neutral gold for each sheet of albumen paper, or about one-third of a grain for plain paper. Each one must tone to suit his own peculiar taste.

Mr. Walker deems the above toning bath a very economical one, as it may be used month after month.

WRINKLES AND DODGES.

BY W. KNOWLTON.*

Collodion.—For the last year or more I have experimented a little with collodion. I think I can now exclaim "Eureka!"

The best, quickest-working, clearest collodion I ever worked, giving best detail, especially to white drapery, I made as follows:—Ether and alcohol, equal parts; gun-cotton, Anthony's, sufficient to make collodion of ordinary thickness. Excite.

No. 1 Collodion.

To each ounce:—

Bromide of cadmium	3 grains
Iodide of ammonium	5 "

No. 2 Collodion.

To each ounce:—

Bromide of potassium	1 grain
Iodide of ammonium	6 grains

In making No. 1, dissolve the excitants directly in collodion; this collodion ought to be at least a week old before using.

In making No. 2, dissolve the bromide of potassium in a little water, and the iodide of ammonium in collodion. This will work, if only a day old.

To use, mix equal parts of No. 1 and 2, and, if it works too intense, add a little more of No. 2; if not contrast enough, add a little more of No. 1. In this manner you can regulate the intensity to suit yourself, and do it immediately; for instance, if you have a lady to sit, with a white dress, add a little of No. 2 to your flowing bottle, and, when you have done with that kind of work, if you wish, you can bring it back to medium intensity by adding as much of No. 1 as you added of No. 2.

I think no one will give up this kind of collodion after a fair trial.

I enclose you a poor cabinet print from a negative made with this style of collodion, in rather a dark day, in four seconds.

Permanganate of Potash.—I have noticed some remarks lately in the journal, in regard to the use of permanganate of potassium for treating negative baths; I have never tried it for that purpose, but find it one of the best disinfectants for old positive (printing) baths. In the use of this article in negative baths you have something to guide you as to the amount required, &c. In positive baths it is different, for an old red reduced bath will not indicate the proper amount to be added by any perceptible change in colour, &c. I proceed as follows:—

Permanganate of potash ...	1 drachm.
Water	2 ounces

Dissolve the permanganate in water, and add with caution to the old bath till you obtain a milky purplish colour; let it remain over night after giving it a thorough shaking. You will find quite a large amount of foul matter has fallen during the night. The solution can now be filtered nearly clear. Now proceed as with an old negative bath, which is, to add the solution of permanganate of potash as above to this filtered solution till you obtain a strong pink colour; let it remain for a few hours, after stirring well before filtering; if quite alkaline, add C. P. nitric acid till it turns litmus paper pretty deeply red, then aqua ammonia until it is as alkaline as you usually use your bath.

The sediment which follows both additions of the permanganate may contain a small amount of silver, but cannot precipitate much unless an excess has been used. I have never found any silver solutions to work better. I usually throw my old silver baths together till I have enough to make it an object to work them over. If this will be of any use to the subscribers of the journal you can use it, and welcome.

Correspondence.

ON DODGES.

Dear Sir,—Is it expedient and politic to expose publicly all the little dodges in combination printing, &c?

This was the question resting on my mind after listening to the excellent remarks of Mr. Cherrill on the above subject at the last meeting of the London Photographic Society. Taking into consideration the hyper-critical critiques of the present day, especially on this subject, would it not be advisable to leave them in the dark as to how such and such an effect is produced. Surely the artist whose great aim has been to obtain a harmonious whole, and that intended to represent nature in its most truthful form, should not be the first to point out its weak parts; and although it may afford amusement to point out how absurd some of such criticisms are, yet it should not be done to the detriment of the work of art itself; and although photographers may use a piece of earth for rocks, or even coals from the cellar, yet it is very questionable whether it is policy to acquaint the public of the same. Most professions have their secrets, which it would be unprofessional to give open expression to; and there was very little, or nothing, gained by the exposure of these "dodges," as they would suggest themselves to any ordinary intelligent printer. Some time ago it was innocently remarked, at a meeting of the same Society, "that photographers did not tell all they knew." This is a great truth; and although I would be the last to advocate secresy of anything that would be of value to the art itself, yet I decidedly depreeate giving such public expression to what may be termed "dodges," inasmuch as it tends to lower the art, in the eyes of the public, at the expense of that which is really scarcely, if at all, worth having. If photographers will communicate their experience and the result of their labours in furthering the art claims of photography, and keep their little "dodges" to themselves, it will elevate the art, educate the public, and benefit the profession. I trust I may be pardoned for speaking boldly on this matter, as I feel this was the only thing that marred an interesting, well written, and instructive paper.

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* *Philadelphia Photographer.*

If not trespassing too much on your space, may I suggest, *apropos* to combination printing, that if landscape photographers would always furnish themselves with double dark slides, and, where taking a view, expose the first plate (say two or three seconds) to get the clouds, and then turn the dark slide quickly round, and expose the other plate for the landscape, and use the two negatives in the way suggested by Mr. Cherrill, very good effects might often be obtained, as well as clouds more suitable for the landscape than those that are often used.—I remain, yours truly,

George Hooper.

68, *Canonbury Park, South, N. January 18th*, 1869.

SECRET DODGES AND PROFESSIONAL OPENNESS.

Sir.—I see in one of your contemporaries a letter from Mr. George Hooper, asking some questions relative to my paper read at the last meeting of the Photographic Society. I also notice in your own Answers to Correspondence that a letter from the same gentleman to the News will be published next week.* I suppose, therefore, that Mr. Hooper has been endeavouring to ask the same questions in two places at the same time. I cannot approve of this plan, as even if Mr. Hooper's suggestions were of sufficient merit to deserve the wide circulation he has given them, he might be very sure I should not take the trouble to answer to both journals; and if Mr. Hooper wished his remarks to remain unanswered, he should have confined himself to more sage and judicious observations such as admit of no answer. I shall, therefore, if my conjecture as to his writing the same letter to the two journals be correct, content myself with answering him in your pages only.

To take Mr. Hooper's letter first under a general consideration, I would say, certainly "it *is* expedient to expose publicly all dodges." So much that every one knows has been the result of the experience of others, that no one can be too free in his explanations of the things he has learned. The greatest aid to general progress is to be found in the free circulation of ideas among workers and thinkers. And I do not think it at all advisable to leave any one, who wishes to learn, "in the dark."

With this preliminary observation on the general bearing of the question, I will turn to a more particular consideration of Mr. Hooper's letter.

Mr. Hooper says, in his second paragraph:—"Surely the artist whose aim has been to obtain a harmonious whole, and that intended to represent nature in its most truthful form, should not be the first to point out its weak parts." This sentence is somewhat badly expressed, as it does not appear whether the words "its weak parts" refer to the "aim," to the "harmonious whole," or to "nature in its most truthful form." Mr. Hooper, however, continues, that although "it may afford amusement to point out how absurd a number of such criticisms are, yet it should not be done to the detriment of the work of art itself." I apprehend that this is a matter resting entirely with the artist himself, and that whether it should or should not be done in a certain manner is a question with which others have scarcely a right to interfere. But setting this aside, nothin that is said in my paper is to the detriment of anyg work of art. The group of children was not taken *originally* with the rock on which Mr. Hooper seems to have split; but that rock was put in afterwards, when the picture was sent up for exhibition at the Society's first meeting, as I stated in my paper, "with no other object in view than to see if the critics would find it out, and so far to test the value of adverse criticism." Not to have pointed it out, therefore, would have been to lose the whole object for which it was temporarily introduced.

Mr. Robinson has always followed nature as minutely as possible in his photographs, and only upon this one occasion, as I have explained, was any deviation purposely made from nature, the special object of which deviation was to show, in its subsequent explanation, "*how* small a thing would put down" the overknowing critic, who brings a microscope to discover faults, and a diminishing-glass whenever he condesends to look for beauties.

In the next paragraph Mr. Hooper continues:—"Most professions have their secrets, to which it would be unprofessional to give open expression." Quite so: *most* professions have secrets, but I do not know of any in photography; all that is known, which is worth having, in photography, is openly expressed in the photographic papers. There are very few exceptions to this rule. A few men have kept special processes and special modes of manipulation secret, but then the object has been a special one, and one which, in the mind of the person, justified the proceeding. For our own part, we are so very sure that success does not depend upon secrets of any kind, that we have no objection to tell all we know.

Your correspondent continues:—"There was very little, or nothing, gained by the exposure of the dodges alluded to, as they would suggest themselves to any ordinary intelligent printer." We do *not* find that these things suggest themselves to ordinary intelligent printers. On the contrary, they are the gradual results of many years of patient practice. In his earlier experiences, Mr. Robinson found it necessary to manipulate as well as to design his combination printing, when he could ill spare the time, simply because "ordinary intelligent printers" did not succeed without more effort in teaching and personal superintendance than the printing itself required. The dodges which Mr. Hooper thinks so much a matter of course, and which have reduced combination printing to a matter of system, have, at least, not been *published* before, however familiar to Mr. Hooper.

Mr. Hooper goes on to observe, that if photographers will show the result of their labours, but "keep their little dodges to themselves," it would be good for all parties concerned. Does Mr. Hooper really think this the mode of dealing with a paper brought before the Photographic Society? *I* should not like to insult a room full of gentlemen by pretending to read a paper on combination printing, and, when the time came, saying they they might look round at the pictures, but of course I was not going to tell them how they were done, which is just what Mr. Hooper's suggestion comes to.

Mr. Hooper concludes that part of his letter which refers to my paper by "hoping he may be pardoned for speaking boldly." Certainly. I am glad he has done so; but I should have been more glad still if he *had* "spoken" at the meeting, as his observations might have been generally discussed.

In conclusion, I have to ask photographers generally, Has Mr. Hooper expressed the general feeling of the profession in this matter? Do photograghers *not* want to be told of any more "little dodges" of any sort? Because, if they no not want to have any more of the matter, I fear that many of those most capable of imparting knowledge will be very happy to accommodate them, and will gladly refrain from obtruding their ideas. They can, doubtless, take pictures and succeed professionally just as well, whether they keep all their processes secret, or whether they give every one all the information they can upon the matter. But I, for one, would rather, for my credit sake, and for the pleasure of being of some use to some one, occasionally contribute even my quota of "dodges" to the general stock of photographic knowledge; and I would add, in the words of the Laureate, scarcely altered—

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* Mr. Hooper's letter stood over last week on account of the pressure on our pages. It appears this week.—Ed.

> "Wherefore slight me not wholly, nor believe me
> Too presumgtuous, indolent, false critics!
> O Blatant Magazines! regard me rather—
> Since I blush to belaud myself a moment—
> As some rare little *ruse*, a piece of inmost
> Horticultural art." . . . . . .

Yours truly, Nelson K. Cherrill.

MR. SWAN'S PATENT.

Dear Sir,—Thanks for your able commentary on my paper, and the information you have afforded in regard to what is covered by this patent, or, at least, intended to be so. I had certainly imagined that the patent was intended to be more comprehensive than you have explained it to be; for indeed, I considered that the lifting of the impression to a *temporary* support by means of the rubber varnish, and whereby it could be easily retransferred to clean paper, and thereby put into proper position as regards right and left, was the principal, if not the only real novelty introduced; but I am glad to be put right as to this, and would defer to your opinion in a matter with which you are so thoroughly conversant, quite as much as though you held a diploma to plead in a gown and wig. Your explanation is, that the patent comprehends a *thing* and a *method*; that the thing is the tissue paper, and the method is the adhesion of the sunned surface to another paper or medium, either as a temporary or permanent support during or after development; that it matters not what is the paste or adhesive material employed, if that particular course or *method* be adopted, the materials not being patented, but the method.

Taking this explanation as probably the true one, let us look at the matter in the light afforded by it.

First, take the *thing* patented—viz., the tissue—and look at it apart from its after use. The first question that suggests itself is, In what novel and distinctive quality does Mr. Swan's tissue differ from what was made before? Poitevin and others covered paper with coloured or pigmented gelatine before; not to be used, I admit, after Mr. Swan's method; but it is not the method of using, but the making of the thing or article that I am just now referring to. Similar tissue was undoubtedly *made* before, and therefore cannot any one do so still? that is, cannot any one pour pigmented gelatine on a sheet of paper, and so make a tissue very similar to Mr. Swan's, without, up to that stage, infringing his patent?

But further, some sunned on the one side, and tried to get pictures by direct printing, and some sunned on the other side through the paper, and tried to get pictures in that way, and in both ways succeeded to a certain extent. Well, cannot pigmented gelatine tissue be still made, and sensitized and sunned on either side, as formerly, without, up to this farther stage, infringing Mr. Swan's patent, or rather, what he was entitled to have included in a patent?

If it is still urged that the tissue made formerly was intended to give a picture on the first paper without effecting a transfer, I answer, Quite true; but let us not at present confound the method, or intended use, with the making of the tissue itself. In point of fact, it was made and sunned before Mr. Swan's patent was thought of, and thus, I fear, there must arise a doubt how far that particular *thing* could be included in Mr. Swan's patent as originated by him.

I am aware that Mr. Swan's tissue is generally made with a deeper or thicker body of gelatinous matter than was generally made or used before his time. He makes it so to facilitate the withdrawing of the first paper in the process of development; but if the sole or main distinction between Mr. Swan's tissue and what was made before is to rest on the unusual *quantity* of pigmented gelatine put upon Mr. Swan's tissue, then we are brought to a point in the consideration of this question that has never been defined, and is certainly not defined in the patent as an essential characteristic of the invention; and, besides, in some of the previous processes, when the sunning was effected through the paper, it did not matter whether the coloured gelatine was laid on thick or thin. It could be used as thick as Mr. Swan's.

Thus much for the *thing* Now for the *method*. And on this point I can be brief. If no particular adhesive material is patented, but simply the mode or method of lifting and holding the impressed image by means of adhesive substances, be they what they may, until the picture is washed up, then I apprehend Mr. Swan would require to show that this was never done before, and I fear that the analogue in Fargier's case is too close to enable him to do so. A method of lifting and retaining the image was adopted and wrought successfully by Fargier, perfectly similar in *principle* to that adopted by Mr. Swan, but Mr. Swan uses different materials for the purpose. It is not the mode, but the materials employed that increase the facilities of the operation in Mr. Swan's case, and if these materials—the adhesive substances employed—are not patented, then I cannot well see how Mr. Swan's method is protected.

Again, if the materials are not patented, but the method of transfer is, wherein does the method of transfer described in Mr. Edwards's recent patent differ from that of Mr. Swan's? He simply uses different adhesive materials, and he has licked up all those that Mr. Swan left free, except the rubber varnish (yea, and he has got albumen also stuck into his list), and with these he lifts the image and holds it for development just as Mr. Swan does; and yet it appears that he has got the opinion of learned counsel that his patent—and, I suppose, the thorough working of the whole process—interferes with no other existing patent! If such be the case, then the single transfer process by means of albumen which I published must be equally free.

But verily these patents are perplexing to common understandings. A little ventilation, however, may help to let us all know better what we are about, and in what line to direct further experiment.—I am, yours, &c.,

Bridgend, Perth, 25th January, 1869. Wm. Blair.

CARBON PATENTS.

Sir,—All persons interested in carbon printing are indebted to you for your lucid, and, so far as I can judge, sound exposition of the claims and limitations of the carbon patent of Mr. Swan. It appears, if I understand you rightly, that a distinction exists between a piece of paper coated with gelatine and pigment, and a "transfer tissue." This has not been pointed out before, I think; but I can see the distinction. But if this be so, is not the use of such a "transfer tissue," and such a "method" of mounting for development as you described, involved in the specification of Mr. Edwards's process, which you published last week? Are we to understand that specification as describing a new patent carbon process, or a modified method of working under Mr. Swan's patent? If Mr Swan's patent be valid, I do not see how that of Mr. Edwards can be worked without a licence or an infringement; if Mr. Swan's patent be not valid, of course no monopoly of the method it describes can be acquired by a second patent. Can you enlighten me upon the subject? Quasimodo.

January 26th, 1869.

MR. EDWARDS'S CARBON PATENT.

Sir,—I shall be obliged by your allowing me to point out, with reference to my specification, published in your issue of the 22nd inst., that, excepting what is now distinctly new, the various stages of the process are all old and antecedent to the date of Mr. Swan's patent. Before completing the patent, I obtained counsel's opinion. That opinion was, that I might safely patent what I claimed, and that the practice of the process as described in the complete specification would in no point infringe what is new in Swan's patent.—Your obedient servant, ERNEST EDWARDS.

Willesden, 25th January, 1869.

UNEVEN DRYING OF ALBUMINIZED PAPER.

MY DEAR SIR,—I noticed in your NEWS of the 23rd October an article on the "Uneven Drying of Sensitized Albuminized Paper," and as I have had a little experience in this unwelcome feature of certain papers, I thought you might, perhaps, not object to a description, knowing your paper is such a valuable medium for the clearing-up of many photographic difficulties, and I owe it not a little for most welcome assistance in many an emergency.

Some time ago, during our "rainy season," when excess of damp is everywhere prevalent in India, and everything is affected by it, I assisted an amateur friend to prepare some paper using Schering's albuminized, and floating five minutes on an 80-grain bath. The paper was quite damp before floating, owing to the weather; on looking at it after drying we found singular spots all over it, and, at first, could not account for them; they were not in the least removed by the hypo, and, of course, the batch of pictures were destroyed. We tried another batch, watching the drying of the paper, and we discovered its unequal drying in time to damp it off with blotting-paper, and save the pictures; but this unequal drying seemed a peculiarity of Schering's paper only, as we tried Hart's without any of these marks appearing. However, it struck me there was no alcohol in the batch, and I always use it; so it was added to the batch, and our troubles ceased at once, and have never, I believe, stood in the way of my friend's success since, Schering's paper giving him excellent prints in every way. This may, perhaps, be a serviceable hint to some of your readers, though it is with some diffidence I offer my experience in face of such valuable articles as have appeared recently from Mr. Bovey.

I would add, I have tried the sulphocyanide bath with much success, and, for some subjects, prefer it.—Believe me, sincerely yours, FRED. KIRBY.

Camp near Kangra, 5th December, 1868.

PIRACY IN AUSTRALIA.

SIR,—In your correspondent's letter thus headed in last week's NEWS, he asks, "Does your Copyright Act not extend to Australia, &c.?" The answer is, "Certainly not!" in the sense in which he asks the question. Those colonies have an independent legislature of their own, and make their own laws; our Acts of Parliament are not in force there. Our Copyright Act confers copyright as "British subjects, or residents within the dominion of the Crown," in respect of original paintings, drawings, and photographs, "made either in the British Dominions or elsewhere:" but the protection of the property thus created can only be co-extensive with the territory over which the Act prevails, viz., the United Kingdom of Great Britain and Ireland.

An individual in Australia can acquire a copyright under our Act which, on compliance with the provisions of the Act as to registration, would be protected within the United Kingdom, but not elsewhere, whether that elsewhere be the Australian colonies or a foreign country. The laws of the country in which he resides must prevail within that country.—Yours, &c., LEX.

Talk in the Studio.

AN ART CRITIC ON ART PHOTOGRAPHY.—We occasionally place under the attention of our readers the remarks derogatory to art photography of pseudo art critics. We have pleasure now in transferring from *Once a Week* some highly appreciatory remarks on the products of the camera, from Mr. E. S. Dallas, a gentleman whose art criticisms in the *Times* have won him a high position. He says:—"The artistic photographic compositions of Mr. H. P. Robinson are so well and widely known that, in speaking of his most recent picture, I am merely indicating a forthcoming pleasure to those who delight in the productions of the camera when they are the outcome of refined taste and manipulative skill. The photographic picture just completed by Mr. Robinson is of large size, 24 by 16 inches, and represents a Kentish landscape. A wide breadth of country is irradiated by a gleamy sun, with the threatening of a passing shower. A girl, bearing a gleaning of corn, artistically and most naturally posed and dressed, is in the centre of the foreground (a rich study of ferns and wild vegetation), and gives importance to the composition. It is a thoroughly English picture in the fullest sense of the word, and, I doubt not, will win the popularity it deserves. It is of the same size as Mr. Robinson's picture of 'Sleep,' published last Christmas, in which a moonlight effect was so well given. This picture, by the way, illustrated some lines in Matthew Arnold's *Tristram and Iseulte*."

THE LATE DR. WRIGHT.—We record with much regret the death of Dr. H. G. Wright, who for some years past has been a vice-president and member of council of the Photographic Society. For many years he was an active and skilful amateur photographer, especially using the camera as a means of recording phases of disease. In the Great Exhibition of 1862, Dr. Wright exhibited a manipulating tent, which was honourably mentioned by the jurors. His pen has repeatedly been engaged in connection with photographic literature, and he has occasionally brought his favourite theme—the aid which photography could afford in the study of disease—before the Photographic Society. He was a man of large and varied accomplishments, and of rare energy. The *Athenæum* has the following account of his professional life:—"One of the younger race of scientific physicians has passed away from London society in Henry Goode Wright, of Harley Street, who died on Thursday, last week, at the early age of forty. Dr. Wright was one of those men who find 'life only wanting to their fame,' for his powers and attainments were high and rare. His family was of Nottinghamshire, and his father was the inventor of the percussion cap, and other admirable things. The young doctor, after taking his medical degree, and studying for some time in Paris and Berlin, made a voyage round the world; working everywhere at botany, geology, and physics; collecting with a keen eye and a ready hand, and making the utmost of his collections by the microscope and the camera. On his return to London he took a high place at once in scientific circles, and began his practice as a physician under circumstances of high promise. A little book which he wrote on 'Headache' ran through several editions. His contributions to the *Athenæum*, the *Lancet*, and other scientific periodicals, were marked by learning and ability. His microscopical discoveries were of importance, especially in connection with the two very distinct subjects of disease and oceanic life. At the time of his fatal sickness occurring, he was engaged in preparing an elaborate work on the 'Diseases of Women,' from which a great accession of knowledge was expected by his professional brethren. These labours were felt to be only the beginning of a life of service to science. He has gone away too young for men to understand how rich was the unwrought lode in the young physician's mind.

SIR WM. NEWTON.—We have also to record with regret the death of Sir Wm. Newton, one of the founders and one of the first vice-presidents of the Photographic Society. In the early days of the Society Sir William devoted much attention to photography, especially in relation to its art uses. The *Times*, in recording his death, says:—"The late Sir William John Newton, whose death occurred a day or two since at his residence in Cambridge Terrace, Hyde Park, in the 84th year of his age, was a son of the late Mr. James Newton, of London, by Abigail, daughter of Mr. Peet. He was born in London, in 1785, and when still a young man attained great popularity as a painter of miniatures. It is said that in the days of the Regency, and even so lately as forty years ago, there was scarcely a member of the aristocracy who had not sat either to Newton or to his rival, and perhaps his superior, the late Sir William Charles Ross. The deceased gentlemen, who claimed to be the nearest surviving relative (bearing the same surname) of Sir Isaac Newton, was knighted in the year 1837, and held for many years the honorary post of miniature painter in ordinary to Her Majesty."

CONCERNING EVERYTHING AND SOME OTHER THINGS.—MR. NELSON K. CHERRILL commences, in our present number, a series of papers, in which he will record his experiences and observations in regard to the specialities which come under his attention in his study and practice of the art. To secure a sufficiently comprehensive title, he will include his articles under the general head: "De omnibus rebus et quibusdam aliis."

Mechanical Printing Processes.—Besides the mechanical printing process of Herr Albert, to which we recently referred, another mechanical printing process has recently been invented in Bohemia, by Professor Husnik, the results of which have great promise, giving good half-tone when printed at an ordinary printing press with ordinary type. The examples we have seen, although fine, are not perfect. Herr Albert, we understand, thinks so highly of the process, that he has purchased it of Professor Husnik, in order to avoid having a competitor, although his own process produces finer results. In our next we shall give some details received in a communication from Herr Albert.

Origin of Proposal to Tax Photographic Portraits.—In a recent speech Mr. Lowe made some humorous remarks on the suggestions for new taxes which continually reach him, and incidentally gives his idea of the motive in which proposals to tax photographs have had their origin. He says:—"The view of the British public is that it is the whole duty and business of the Chancellor of the Exchequer to devise the imposition of new taxes, for almost every letter that is received by him is, not a request for a repeal of old taxes, but a suggestion for the imposition of new taxes. It appears to me that the amount of attention devoted by the mind of England to this subject is perfectly portentous; it forms part of their daily life, and is associated with their most intimate convictions and ideas. If a child burns its finger with a lucifer match, its father at once writes a letter to the Chancellor of the Exchequer, and suggests that an adhesive stamp should be applied to lucifer matches. If a gentleman on whose birth Venus and the Graces have not happily smiled finds in a photograph his features depicted in a manner more truthful than flattering, he writes off to the Chancellor of the Exchequer and suggests that an adhesive stamp should be applied to photographs." *Mr. Punch* was the last to repeat this proposal. Have the photographers done his portraits injustice, or too much justice?

To Correspondents.

W. D. Bircham (Reepham).—Our Year-Book was published on the first of January, and has been procurable of the Publisher at any time since. The answer "not out" is a common cloak for laziness and neglect. Thanks for your good wishes.

E. Fisher.—You can make the old and partially solidified collodion liquid by the addition of ether, but it will be quite impossible to say, without trial, whether you can make it fit for use or not.

F. M. W.—The possession of a patent amounts to very little indeed, as in this country they are granted indiscriminately. If you are certain your invention is new, and that it is not covered by some other patent, then a patent, if obtained, will probably be valid; but whether remunerative or not we cannot, of course, say. Very few photographic patents are. The stamp duty payable on lodging your provisional specification is £5. After acquiring provisional protection you have a few months in which to determine whether you will proceed or not. The total amount of the stamp duty on acquiring protection for three years amounts to £25. Other costs of agents, &c., may vary from £10 to £20. This patent gives the power of defending yourself at your own cost against infringements.

Fred Kirby.—It is difficult to state the cause of want of sensitiveness in your morphine plates without a fuller knowledge of particulars. Acetate of morphine should have been used, not nitrate. We have not tried the latter, and cannot state what its action would be. We shall be glad to hear details of your success with the gum process. The simplest plan to prepare the calico covering for your tent is to erect the frame-work and cut a paper pattern for each side, then slightly stitch the patterns together to see if they fit before cutting the calico, and joining in like fashion.

H. W.—A layer of sand and a layer of charcoal afford good filtering facilities. A brass tap is best. 2. You will find full details of the mode of alkaline development in our Year-Book for 1868; the plan described by Mr. Mawdesley answers admirably, or that given by Mr. Gordon in the same Year-Book in describing his gum process. 3. The kind of soluble cotton required is that made with weak acids at a high temperature, or the powdery description, giving generally collodion yielding great intensity.

Improver.—In combination printing the mask is occasionally fitted to the face of the negative, and occasionally to the back. If a clean, accurate joining be required it is fitted to the face; if a vignetted joining, it is fitted to the back. 2. In the system of registration described the registration marks must, of course, exist on every print. 3. In the case in question, and in similar cases, the tissue is placed in contact with the face of the negative; but a mask of tissue or other paper is also frequently used at the back of the negative, and a little black varnish is carefully applied to the face of the negative, so as to secure a perfect joining.

Venator.—It is impossible to give even an approximate idea of the necessary exposure of a given subject without seeing the amount of illumination. Snow scenes, for instance, may be accompanied by a dull grey, or even foggy, state of the atmosphere, or by a clear, bright, sunny light. As a rule, however, the light is very weak in winter, and the cold materially retards chemical action. With a triple lens, aperture about 1-20th of its focus, and Liverpool dry plates, we should try on a snow scene an exposure of about two minutes. The best plan will be to try a plate at home upon a snow scene, and develop it before going out; this will enable you to form some estimate of the requirements of the case. For pure landscape probably the single lens will answer better in some respects, but the triple answers very admirably for most purposes. 2. The subject is more fully treated in the present than in the former edition. 3. The object of adding a little ammonia to the water to which a little nitrate of silver is added, in order to purify it by sunning, is solely to render it alkaline and aid the action of light in reducing the silver and the impurities with which it combines. The water obtained from ice is not necessarily quite pure, as it often contains organic contamination. The safest plan is distillation, and it is not very difficult. Thanks.

Young Photo.—You will find in our Year-Book just out an epitomized statement of the collodio-bromide process as practised by Mr. Carey Lea, and of which the process described in our last is a modification. Your best course will be, however, to read carefully all that Mr. Lea has said on the subject; you cannot hope to succeed perfectly by attention to epitomes only. An epitome may furnish memoranda and suggestion, but rarely complete instruction. The number of grains of gum in his formula is 600. Mr. Lea's dry plates cannot be purchased ready prepared.

J. B. B.—It is not quite certain what part sulphate of copper plays in conjunction with the iron developer. Theoretically, it should not have much, if any, action. It has no affinity for oxygen, and is not a reducing agent; it may retard the action of the iron a little. It is said by some to give a more harmonious negative; by others to give denser negatives; but we cannot speak of the matter from experience. 2. We believe that Mr. Werge has designed a good view meter, which may be had at Mr. Hughes's warehouse.

H. S.—You will find it much more satisfactory to get plain collodion and prepare some collodio-chloride after the formula given in our Year-Book. The operation is simple, and the result generally satisfactory. That you describe is evidently defective. 2. Your oxygen should not need any drying. The lime cylinder generally requires drying by gentle heat.

Anxious.—The negative appears to be a little wanting in gradation; but presuming it to be pretty good, print No. 1 is a little under-exposed, print No. 2 about right, and we should imagine not a very bad print from the negative. No. 3 has been fully exposed and over-developed. The tone of developed collodion prints is rarely warm; but here the tone is of an unnecessarily cold black. Pyro development will materially modify this. 2. There is no reason why you should not use pyro development for such prints with collodion announced as prepared especially for iron development. 3. The toning of a collodion print may be safely carried on in daylight. 4. Of the two evils, over-exposure and under-development are best for collodion prints of this kind.

Ignorant.—The defect is less due to the varnish than to the collodion. In some samples of collodion, either from the quality of the original soluble cotton, or from a decomposition which has taken place after the collodion was made, the film is partially soluble in strong alcohol, and hence the marks at times, and complete destruction at other times, which arise from varnishing. The best remedy is found in treating the film with a weak solution of gum arabic before drying, which will effectually protect it from injury in varnishing.

John Cockcroft.—To enlarge a card portrait to 24 by 20 inches with a lens of 4½ inches focus, the relative distances should be as follows:—The negative should be a fraction over 5 inches from the lens, and the sensitive surface to receive the enlargement 36 inches from the lens. You must remember, however, that this refers to a lens of 4½ inches equivalent focus. If the back focus be 4½ inches, the equivalent focus is probably, of a portrait lens, about 6 inches, in which case the respective distances would be about 7 inches and 48 inches.

A Subscriber (Cardiff).—You will find on page 422 of last year's volume, September 4th, a description of a copying camera with diagrams. A portrait lens will answer well with it.

A Winterton.—The design and effect of the memorial card with photographic portrait are very good indeed.

Several articles and reviews in type are again compelled to stand over.

THE PHOTOGRAPHIC NEWS.

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HERR ALBERT'S NEW MECHANICAL PRINTING PROCESS.

We have been favoured with some further examples of the new mechanical printing process, specimens having been kindly forwarded to us both by Dr. Liesegang and Herr Albert. From the character of the prints and the information which has reached us, there can be little doubt that this process will aid materially in developing the commercial application of photography.

The examples are varied in character, but all possess excellent qualities. We have portraits after nature, landscapes after nature, and reproductions, the prints ranging from card size to 10 by 8 inches. They are printed on plain paper, enamelled paper, and direct upon cards or stout plate paper; and in most cases possess a margin like an engraving, so that no mounting is necessary. In all cases the gradation is exceedingly perfect, without trace of any grain save that which may belong to the paper itself. They are printed in printer's ink, a pleasant warm black or purple brown tint having been chosen. The chief want we feel in examining several specimens is a slight want of force and brilliancy, but whether this may be due to the quality of the negatives employed, or to the taste of the producer, or whether it is from some cause inherent in the process, we cannot at present state. One example has been treated with some varnish to give a glazed surface, and in it we get a similar accession of vigour to that obtained on varnishing a plain paper silver print, the prints in question most nearly resembling, as we have before intimated, the character of delicate plain paper prints. If we compare the results with those of other known processes, we must admit that whilst in delicacy—the point, by the way, in which most mechanical prints have been wanting—they are equal to any, yet in point of brilliancy the examples before us are not quite equal to albuminized prints, carbon prints, or Woodbury prints.

The portraits are all card size. Some of them are printed on enamelled cards with the usual narrow margin, and is exceedingly pleasing; some are on plain paper; and some are on collodionized paper. The landscapes—or, rather, street scenes—are of larger size (about 10 by 8), and are printed on paper with a margin suitable for book illustration, and on cards with margin, and have the effect of an ordinary mounted photograph. We have an illustration in the street scenes of the fact which we had before understood—that reversed negatives are required—and the specimens before us having been printed from ordinary negatives, the inscriptions on signboards read backwards. Amongst the reproductions we have an illustration of the mode in which the process is being applied to the rapid multiplication of small pictures, one sheet about 10 by 8 inches in size containing six-and-thirty copies of prints placed side by side like a sheet of postage stamps.

In the information which has reached us from various sources we have as yet no certain suggestion as to the nature of the process, but we learn that it is easy, cheap, and, within reasonable bounds, without limitation as to size or to the number of impressions which one plate will yield. Impressions of 20 by 14 inches cost, we understand, about one shilling. Prints of 30 by 20 inches have been produced as perfect as the card pictures, and although only 1,300 impressions have been taken from one plate, the last is said to have been as good as the first, and the plate apparently capable of yielding as many more impressions. The cost of producing the plate or printing surface, Herr Albert informs us, is about the same as that of producing a single silver print from a negative. The plate employed is not metal, but glass, and it may be printed either by means of a copper-plate press, a lithographic press, or an ordinary type printing press. Such are the facts we glean from the communications of several continental correspondents, from the information of M. Albert himself, and from the prints before us.

It may be interesting here to mention a few facts in relation to the mechanical prints of Professor Husnik. These prints possess good gradation, but a very fine grain is unquestionably present, and the effect is suggestive of photolithography. We are informed, however, that although the printing surface is on stone, the printing is of the character of surface or block-printing, and can be effected at the ordinary press in conjunction with type. The examples we have seen all have good qualities; but they possess more of promise than of performance, whilst those of Herr Albert are absolutely good. The sum required by Professor Husnik for his process, we are informed, was 6,000 Austrian florins, equivalent to about £575; and it may be interesting to add, that Herr Albert is said to have bought up the process to avoid competition.

As the process is probably destined to play an important part in the future commercial phases of photography, one or two extracts from letters on the subject may possess interest. Herr Albert says, after some preliminary observations:—"I sincerely believe that my process will revolutionise photography, as it is endowed with certainty, cheapness, and beauty, and is thoroughly practical, being really a mechanical printing process fulfilling all those conditions which have been sought for so long. The production of one printing-matrix requires the expenditure of about the same amount of time, trouble, and money as that necessary to produce one silver print, and may be undertaken without the aid of the sun. The printing may be undertaken in any description of press, whether lithographic, copperplate, or printer's. The pictures do not require mounting, but may be produced either brilliant or matt. I have produced from one plate 1,300 (and, I believe, as many more could have been printed), of which the last was as perfect as the first. It is unnecessary for me to enter into the details in which my process differs from that of other multiplying processes, and also from the carbon and Woodburytype processes. I have obtained copies of the size 50 by 80 centimetres, and also of carte-de-visite size, both equally perfect. My printing matrix is of glass, the employment of which has many advantages: its even surface (which allows of it being placed in perfect contact with the negative), its cheapness, and, finally, the fact that by its means the process may be carefully watched,—all these are advantages not possessed by copper, zinc, &c."

Dr. Vogel sums up his information and conclusions on the subject as follows:—

"1. The process is probably the same as, or similar to, Tessie du Motay's,* for the prints have quite the same character, but are *much finer* in half-tones than Tessie's (these are, in general, the best ever produced in half-tones with greasy inks), and Albert obtains 1,300 prints from a cliché, whilst Tessie could only produce 60 or 70 good prints from a plate.

"2. Albert does not work on copper, as Tessie, but on *glass plate*. This is an excellent material, for it is even, transparent, hard, without any grain, and resists chemical influences.

"3. Albert requires *inverted negatives*, as do Tessie, Woodbury, and others; from an ordinary negative the picture is not in the right position. For making this inverted negative he uses a prism of glass, which he puts before the object. The large surface *is silvered*. In this manner only one-tenth of the original amount of light is lost.

"4. Albert prints on engraving paper, and for this reason he does not want a board for mounting the prints. He can also print on linen or silk. I have seen very nice silk prints produced by him.

"5. The prints have the aspect of a good photograph on plain paper, but not quite the brilliancy and the sharpness of an albumen print or carbon print. They are improved by brushing over them a varnish."

It is scarcely to be apprehended that any of the rapid or mechanical printing processes yet introduced, or to be introduced—for as many minds are engaged in this direction it is not unnatural to expect fresh invention—will affect the ordinary practice of photography, in which a dozen or two copies only are required from one negative; but for all purposes of publication some of the new processes will doubtless supersede silver printing, and a wide future for photography seems to open in this direction.

PERSULPHATE OF IRON IN THE DEVELOPER.

A correspondent, whose letter appears on another page, asks some questions regarding the action of persulphate of iron in the developer, at the same time offering some remarks himself in controversion of the views recently put forth in an article in a contemporary journal, entitled "Novel Action of Persulphate of Iron on Silver." Our correspondent concludes his letter by a curious remark, on which we shall make a passing observation before proceeding to the subject of his query. He says:—"I hope that scientific discussion can be conducted without discourtesy and bitterness, although facts too often seem to be opposed to such an assumption." There is no doubt that scientific discussion can be conducted without discourtesy and bitterness, and equally little doubt that it should be. One of the chief sources of the bitterness which often arises in discussion is the common assumption of superiority in him who opposes the views, or points out the errors, of another. This tone of superiority is bad enough if he is right, and utterly intolerable if he is wrong; and as this tone of superiority generally increases in the inverse ratio of the knowledge and capacity of the would-be corrector, and as the most ignorant are often most ready to throw themselves into the arena to dispute something they don't understand, scientific controversy has too often been tinctured by the offensive character which our correspondent deprecates. There is little risk at any time of offence arising if discussion be initiated in a genuine spirit of courtesy and modesty; and we have no fear of any bitterness in discussing or opposing the views expressed in the article upon which our correspondent asks our opinion.

The question raised is: What is the effect of persulphate of iron in the developing solution? does it tend to the production of softness and detail, or of contrast and brilliancy? and in what mode does it act?

The writer in our contemporary, the *British Journal*, states that it produces softness or increase of half-tone. To do him full justice, we will quote his own statement of the facts, and the theory deduced from the facts:—

> With a new and energetic developer, even in presence of a full proportion of restraining acid, the deposition of silver on the lights of the negative takes place very rapidly, thus soon exhausting the silver carried by the plate; while the half-tones, owing to their more feeble definition, have failed to attract the notice of a sufficient quantity of the falling silver. We know that silver when precipitated with moderate rapidity always selects the more prominent portions of the image for attachment in preference to the less marked lines or points. * * *
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> When an old iron developer is employed, instead of the fresh one whose action we have just been considering, the very marked difference is observed which we have frequently drawn attention to in former articles. Now the action takes place regularly; the silver is deposited rather more slowly than by the fresh developer, there is less tendency to granularity, and the half-tones receive their due proportion of the metal. This result can only be attributed to the presence of peroxide of iron in the developer, since the addition of some of the *per*sulphate of iron to a new developer confers the desired properties upon the latter. That the persalt of iron plays the part of a restrainer there can be little doubt; but if we "restrain" the developer to an equal extent with citric acid we do not succeed in obtaining such soft negatives. It is evident, therefore, that some action must come into effect other than the ordinary influences with which we are acquainted. We have long sought for a satisfactory explanation of this singular phenomenon, and we believe that we can now solve the problem with the aid derived from a very singular experiment, which we shall here describe.
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> A solution of nitrate of silver was added to an excess of protosulphate of iron dissolved in water acidulated with sulphuric acid. A precipitate of metallic silver was thus obtained, which was carefully washed and then digested for some time with a solution of *persulphate of iron* perfectly free from any nitrous compounds. It was soon perceived that some of the metallic silver had *dissolved* in the liquid. On examination the solution was found to contain protosulphate of iron (though no protosalt was present in the original liquid), sulphate of silver, and, of course, the large excess of persulphate of iron. The silver, in dissolving, had, therefore, reduced a portion of the persulphate of iron to the condition of protosalt, just as in one of M. Vogel's old experiments. Now, though the silver has no tendency to quickly separate from this solution, notwithstanding that the reducing protosalt of iron is present, yet, when the solution is diluted and placed in contact with a body capable of attracting to itself silver, the metal is then slowly separated from the liquid.
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> In the above experiment we have an obvious clue to the explanation of the nature of the *role* which persulphate of iron performs in the ordinary developer. In addition to the restraining function of the persulphate—which was so marked in the above instance that the silver could exist for a long time in the solution, notwithstanding the presence of a reducing agent—we have the singular fact that finely-reduced silver dissolved in small quantity in a solution of persulphate of iron, and is slowly separated therefrom in a state of fine division on the liquid coming in contact with any surface exerting sufficient attractive power to induce the separation of the metal. The persulphate, then, has the power not only of restraining the deposition of the metal, but of drawing out the time during which the process of deposition takes place, and so giving the half-tones the opportunity of attracting their fair share of silver to themselves.

The theory here laid down is interesting and ingenious, but, according to our own experience, and to all that we have found recorded or known of the experience of others the facts are all wrong: persulphate of iron the developer does not aid in the production of half-tone, but retards it, and tends to contrast and brilliancy; a slow developer increases granularity and decreases half-tone; a rapid and energetic developer, on the contrary, tends to the production of detail and little contrast. About seven or eight years ago we pointed out, as a principle in development, that weak and slow developers tended to the production of contrast, and strong developers to the production of detail and softness. The facts were familiar enough to most intelligent operators, but had not been recorded, nor the reasons before pointed out. The explanation was this: In slow development there is time for a selective action, as our contemporary states; but the selection exercised tends to aggregation and increase of deposit in the high lights to the neglect of the half-tones; whilst with a strong and rapid developer the silver is thrown down at once in fair and equal proportion over all parts of the plate. If it is too strong and acts too rapidly, it is thrown down too evenly, producing fog; if too weak, or too much restrained, and acting too slowly, it produces excessive contrast—black-and-white without half-tone, and especially without detail in the shadows. This, broadly stated, has been our own universal experience; and we believe it is general experience. Let us for a moment consult trustworthy authorities who have written on the subject. Our correspondent points out that Mr. Carey Lea some years ago emphatically stated the same theory, and he has more than once accredited us with its origin. As the authority of Mr. Lea will be readily recognized by our contemporary, we will quote from his last dictum on the subject. In his Manual of Photography, just published—and the italics are his—he says:—"*Just in proportion as the silver falls more slowly, it is more subject to the attraction of the more strongly impressed parts of the silver.* In a slow precipitation the most strongly impressed parts of the film will get a larger proportion of the deposit than in a rapid precipitation. This fact, which has been thoroughly established, both by theory and practice, is of the highest importance, and is the key to all the peculiarities of iron development in the wet way."

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* It is interesting to note that the same things produce different impressions on different persons. Dr. Liesegang remarks that some of Tessie du Motay's prints are quite as fine, but so essentially different in character as to suggest a different process.—Ed.

That persulphate of iron exercises a solvent action on metallic silver, especially in a finely divided state, is well illustrated by our contemporary's experiment. We have long been familiar with the fact; but it is because of this, as well of in virtue of its restraining action, that its presence is inimical to the production of delicate half-tone. *If present in excess, it dissolves the fine deposit forming the half-tone.* We have more than once noticed this. M. Gaudin, speaking of its action, says:—"The red sulphate of iron so rapidly dissolves the metallic silver which forms the collodion picture that it may be employed to remove the silver; by allowing plates to remain some time in a bath of this sulphate, they come out quite transparent." In virtue of this solvent property it is inimical to fog, and tends to keep the deep shadows perfectly clean; and if used in excess, it is inimical to the production of the lower range of half-tones, which, consisting of the most attenuated deposit of silver, are not only the most easily influenced by a retarding agent, but most easily removed by a solvent.

The value of a judicious use of a trace of the persalt is well known in practice, and the suggestion to use a little of the officinal liquor of persulphate of iron, with its free sulphuric acid neutralized by acetate of soda, may often be useful, as this can always be procured of a pharmaceutical chemist, and an old developer may be so improvised at a moment's notice.

Critical Notices.

THE ISLE OF WIGHT. By J. Redding Ware. Photographic Illustrations by Russell Sedgfield and Frank M. Good. (London: Provost and Co.)

The guide-book is an established institution of all places of holiday resort; and, as a rule, it is an institution which affords not a little food for wonder and speculation as to its origin. It is generally such an odd mixture of legend, history, and gossip, of doubtful archæology, marvellous geology and botany, the whole being pervaded by an atmosphere of local advertisement, that, after a little speculation as to its authorship, one is fain to come to the conclusion that, like Topsy, it "growed." The book before us is to be distinguished emphatically from this class of literature. As a rule, the best and most trustworthy of the guide-book order is essentially provincial in tone, and, even if useful for reference, can rarely be read with pleasure. Mr. Ware has, on the other hand, produced a very charming book, not only most comprehensive and minute in its information, but written in a picturesque and attractive style. Very few spots in the world, certainly none within a couple of hours' journey of the world's metropolis, contain so much of natural beauty, and such rare variety of natural beauty, within so small a space, as the Isle of Wight; and Mr. Ware has explored the scenes of this beauty with an appreciative eye, and described them with a vivid pen. He has also entered with keen interest into the history and associations of each landmark of the life of man in the island. As a history of the island, and a guide to its topography and to its charming scenery, the work must take a standard position.

Of the photographic illustrations which bring the work under our special notice we need not say much; they consist of upwards of a score of photographs of views of places of interest or beauty taken by Russell Sedgfield and Frank Good, and, as our readers know the names of both, these gentlemen's names are guarantees for good work. We have often had to complain that photography as commonly employed for book illustration leaves much to be desired; but in this instance the results are far above the average, some of the pictures being exceedingly fine. The view of "Shanklin Chine" is a good picture of a charming but difficult subject; "Brading from the Downs" is another fine picture, full of repose and quiet beauty; "Shorwell" and others are also especially successful. Photographic illustrations are especially valuable for the interest with which they revive associations, but photography rarely does justice to the best scenes in the Isle of Wight; it is essentially a "green isle," and how rarely does photography fairly render green foliage! This work forms a beautiful quarto volume, handsomely got up throughout; it will be welcomed by all who have, or hope to have, interest of any kind in the Isle of Wight.

A MANUAL OF PHOTOGRAPHY: Intended as a Text-Book for Beginners, and a Book of Reference for Advanced Photographers. By M. Carey Lea. (Philadelphia: Benerman and Wilson; London: Henry Greenwood.)

There are two facts which strike us in reading this book, the mention of which in our estimation involves high praise. First, the book has been written, not compiled: it is the result of the author's own knowledge and experience, not simply the product of gleanings from various sources. Second, whilst it is comprehensive and complete, its completeness consists in the presence of thoroughly trustworthy instruction and information regarding all the ordinary operations in photography, and not in the accumulation of formulæ and multiplicity of recipes, by which youthful students, at least, are bewildered instead of helped. The work is, in fact, a manual, not an encyclopædia. It is perfect as a text-book for beginners; and not less so as a reference-book for advanced students, if they desire to refer to lucid statements of safe principles, or to ascertain, without the need of special experiment, which out of many existing formulæ it is safe to use. It will be seen from these qualities that Mr. Lea has produced for photographers a readable book, full of well-stated instruction, instead of a book to stand upon their shelves only for occasional reference.

From what we have said it will have been gleaned that this is eminently a practical book; it is, moreover, clear and perspicuous in style, and excellent in arrangement. The first part is devoted to clear general instructions for a beginner as to the selection of materials and the operations in photography; the concluding chapter in this part consisting of eight-and-twenty rules or maxims, which many experienced photographers may ponder with profit. The second part is devoted to a brief theoretical statement of optical laws in relation to photography, and a description of photographic lenses and their qualities. The third part consists of twenty-two chapters, in which the practice of photography with dry and wet processes is fully described; special processes, such as micro-photography, carbon processes, modes of treating residues, photo-lithographic processes, iron processes, &c., &c., being included in this part of the book. The chapter on Failures and their Causes given in this part will be found very valuable for reference. The fourth part is devoted to theoretical considerations; and the fifth part, besides a chapter on photography in its relation to health, contains some capital instruction for the mode of conducting chemical manipulations, which will be of much value to experimental photographers who have not had a chemical training. We purpose, on a future occasion, to give some extracts from the work, which our space will not permit on the present occasion.

PHOTOGRAPHIC MOSAICS, 1869; An Annual Record of Photographic Progress. Edited by M. Carey Lea, M.D., and E. L. Wilson, Editor of the *Philadelphia Photographer*. (Philadelphia: Benerman and Wilson.)

This excellent little volume partakes of the character of a year-book from which the almanac element has been eliminated. It contains, besides some capital original matter, an admirable selection from the photographic literature of the year issued throughout the world, presenting the reader, in a convenient and accessible form, with the most important matter for thought or study, or the most valuable methods and processes for ready reference. No words of praise could make the work seem more desirable, we think, than this simple description.

Foreign Miscellanea.

The *Reform*, a Hamburgh journal, gives an article *à propos* of the recent photographic exhibition which has taken place in that town. Although the majority of the pictures exhibited were of small dimensions, being mostly of the carte and cabinet size, the *Reform* points out, very properly, to the public, who are inclined to depreciate miniature photographs, that there are carte pictures and carte pictures. In illustration of this the writer of the article refers to the collection forwarded by Fritz Luckhardt, of Vienna, all of which, he says, appear to be standing out of their frames. Passing from the carte pictures, the productions of Salomon are next criticised, full justice being done to the artistic posing, to the manner in which the light is made to fall quietly and harmoniously upon the model, and to the other many effects which characterize the works of this grand artist. These pictures, says the *Peform*, at once set at rest the question as to whether photography is an art, for the different styles of photographs shown are not produced by different apparatus and chemicals, but simply by different methods of posing and lighting. The photographer is not the slave of his instrument, but its all-powerful master, and he uses it in precisely the same way as the painter does his brush. The large female portraits of Angerer, of Vienna, are also mentioned favourably, as are likewise those of Milster, of Berlin. The tones of the pictures are very various, ranging rom the cold blue-black tint—which almost called forth a fhudder on the part of the spectator—to the warm chocolate brown, which imparts to the print the appearance of a finely shaded sepia drawing. The latter description of tone was generally preferred, and gave by far the best results. Some very fine landscape productions were among the exhibits, but the critic declines to say that they are equal to English landscape pictures; those of Carl Matzner, of Vienna, are said to be especially good.

At the last meeting of the French Photographic Society M. Marion exhibited a new paper for printing purposes, which he denominates chloridized mica paper. It yields prints possessing great vigour and brilliancy, and with a lustre which tends to make the smallest details appear in relief; the material may be called, with truth, miniature photographic paper. It is handled in the same way as albuminized paper, excepting that the sensitizing solution used is somewhat stronger, a silver bath of 12 or 15 per cent. strength being required for the purpose. If, in the fixing and washing operations, air-bubbles or blisters are formed on the surface, the finished print should be dried between sheets of filter paper, and carefully rubbed and pressed; indeed, this method of drying is to be recommended in any case, whether the prints are imperfect or not. When the water has been absorbed by the first pad of filter paper, it is well to transfer the print to a second one, and to subject it to a slight pressure; this operation will render the pictures perfectly flat, and in a favourable state for trimming and mounting; or they may, if preferred, remain unmounted, as they retain their flat appearance. The best toning bath is that prepared with the *Sel Encausse* which is capable of imparting any desired tint to the picture.

A proof of M. Gayffier's picture, *L'Herbier Forestier de la, France*, has recently been presented by the artist to the French Photographic Society. This work, of which 250 copies have been struck off by the Maréchal and Tessié phototype process, is made up of as many as 200 plates. The impressions are said to be very fine, and, being produced in printers' ink, are, of course, permanent.

In Silliman's American Journal Mr. H. Bill publishes the details of a method for detecting the presence of bromides. The iodides in the solution to be tested are first eliminated by palladium, and, after the excess of palladium salt has been got rid of by sulphuretted hydrogen, the solution is concentrated. Two test tubes of the same form, dimensions, and colour are chosen, and into one is poured a little of the solution to be tested, while in the other pure water is placed, to which a trace of chloride of potassium has been added. Into each tube a drop of hydrochloric acid is allowed to fall, and then a drop of a solution of chloride of gold. The tubes are now inspected from above, and if any bromide is present in one of them, a yellowish colour is observed, which will be the more marked on comparing the two solutions together. In this manner it is possible to detect the presence of one centigramme of bromide of potassium dissolved in a litre of water.

M. Romain-Talbot exhibited to the members of the French Photographic Society, on the occasion of their last meeting, a sample of Dr. Liesegang's collodion manufactured from pyroxiline prepared from tissue paper.

The details of the method adopted by the jury in awarding the prizes at the Hamburgh exhibition has just been published, from which it appears that in the consideration of the claims of exhibitors three points were discussed: firstly, the degree of art manifest in the photograph; secondly, the extent to which technical difficulties had been overcome; and, thirdly, the progress which had been made, more especially as regards the future of photographic processes. The Hamburgh Society named the number of medals, &c., that they were prepared to give, but left it entirely in the hands of the jury to say whether the number should be increased. For the award of these prizes the members of the jury divided themselves into three groups, the first taking upon themselves the consideration of photographic instruments and paraphernalia, the second occupying themselves with the chemistry of the subject, and the third devoting themselves to the results exhibited. After the duties of the jury had been brought to a close, the Hamburgh Society awarded to the members thereof the following distinctions: to MM. Milster, Herzog, Kruss, and Grabe, silver medals; and to M. Albert and Dr. Steinheil gold medals, to the former for his new photo-printing process, and to the latter for his aplanatic lenses.

EXHIBITION OF THE FRENCH PHOTOGRAPHIC SOCIETY.

The eighth exhibition of the French Photographic Society is just announced. It will be held in the Palais de l'Industrie, will open on the 1st of May, and close on the 31st of July. An appeal is made by the Committee of Administration to all photographers, at home and abroad, professional and amateur, to contribute, so as to give this exhibition the highest interest. No medals or awards are offered, but the expositors must pay the expense of carriage to and from Paris, and must further pay at the rate of ten francs per metre of wall space (about eight shillings per superficial yard), and a much higher rate for table space. We are afraid the conditions are not tempting, but we shall have pleasure in learning that any English photographer is sufficiently actuated by regard for the honour of the art to contribute his best works to aid in forming a good exhibition. All demands for space should be made to M. Laulerie, the Secretary, before the 15th of March, and all contributions forwarded to arrive between the 1st and 10th of April. We append the published statement of conditions:—

Rules for Exhibitors.

The French Photographic Society will organise in an especial part of the Palais de l'Industrie, its eighth public exhibition of works belonging to all the branches of the photographic art. To it they invite all French and foreign photographers, and for this purpose they publish the rules and conditions adopted at the general meeting of the Society of January 8th, 1869, from the propositions of the Committee of Administration:—

1st. The opening of the exhibition will take place in the Palais de l'Industrie on the 1st of next May, and it will be closed on the 31st of the following July.

2nd. All persons, either members or non-members, of the Society, wishing to exhibit, should give notice to the Secretary as soon as possible, and, at the latest, before the 15th of March. They must state, at the same time, the amount of space they require, according to the conditions laid down in the different paragraphs of these rules.

3rd. All objects for exhibition must be sent addressed to M. Martin Laulerie, Secretary of the Society, Porte No. 1, Palais de l'Industrie, with carriage paid, between the 1st and 10th of April at latest. This rule will be enforced.

4th. They must be accompanied with a list stating the number of things sent, and the list must be signed by the exhibitor.

5th. All photographs should be protected by frames. All foreign exhibitors wishing to avoid the expense and difficulty of sending framed pictures are advised to send their pictures unframed to their French agent, and request him to have them placed under glass and sent to the Palais de l'Industrie, Porte No. 1, not later than the 10th of April. Under these circumstances the exhibitors must send a notice of their parcel to M. Martin Laulerie, Secretary, and send to him as Secretary of the Society, at No. 9, Rue Cadet, with the notes mentioned in Articles 4 and 8 of these rules. Such exhibitors as have no French agents may send their pictures unframed to M. Laulerie, who will have them carefully and economically framed. The prints in this case must be sent in from the 1st to the 5th of April, not later. Address, M. Laulerie, 9, Rue Cadet, Paris.

6th. No picture may be admitted that has been previously exhibited at the French Photographic Society's exhibitions.

7th. It is desired that the exhibitors should put their names upon their pictures, or upon the frames in which several pictures are shown, and they may also state their address; *but it is forbidden* that they should place above or inside of their frames inscriptions which, by their size, form, or wording, should present the appearance of trade or business advertisements.

8th. It is necessary the name of the subject represented by each print, together with a short notice of the negative process by which it was produced, as by wet or dry collodion, plain or waxed paper, &c., should be given. All other information upon the process, either wet or dry, will be received with pleasure.

9th. No mention of price must be placed on the prints or frames. Exhibitors wishing to sell must send all necessary information to M. Laulerie, who will inform all who may be desirous of buying.

10th. No print must be withdrawn until after the closing of the exhibition, even though it remain open after the 31st of July

11th. All works will be submitted to the inspection of a jury, who will accept or reject them. The Committee have not limited beforehand, in a general manner, the number of prints which may be admitted of each exhibitor, but they hope that exhibitors will do their best to lighten the task of the jury by themselves making a careful and conscientious choice; above all, in portraits and card pictures.

12th. The French Society undertakes all the general expenses of organization, installation, and administration, with the following few exceptions:—

The exhibitors shall pay a fixed rate of ten francs per metre for the space covered by their frames. Those who need especial place—such as a table—for enamels, screens, stereoscopes, &c., shall pay at the same rate, calculated upon all sides of this special space, which will be made at the exhibitor's own cost. In such cases it will be necessary to arrange all with the Committee of Administration before the 1st of next April.

The exhibitors must deposit before the 31st of March the one-half of the money, calculated by the amount of space they have asked for; the rest is to be paid from the 15th to the 25th of April, after the space has been awarded by the jury of admission. If the first payment exceed the space allowed, the surplus will be returned to the exhibitor. In case of non-payment of the fixed rate by an exhibitor, the Committee reserve to themselves the right of keeping the object as the property of the French Photographic Society, and of exhibiting it as such. If an exhibitor withdraws after his admission, and does not send his pictures, such money as he shall have paid will be kept to pay for the space accorded to him.

The jury appointed by the Society consist of M. le Comte Aguado, M. Bertsch, M. le Comte de Cardaillac, MM. Civiale, Cousin, Ferrier, Franck de Willechole, Paul Gaillard, de Gayffier, Hulot, Jeanrenaud, Ranaisson, Robert of Sevres, Chevalier de Schwarz, and M. Soulier, *ex officio*; MM. Regnault, de l'Institute, Honorary President of the Society; M. Balard, President; M. Peligot, President of the Committee; M. Davanne, Vice-President of the Committee; M. Bayard, General Secretary.

All objects exhibited must be withdrawn within one week after the closing of the exhibition.

TRANSPARENT PHOTOGRAPHS ON PAPER.

BY A. DE CONSTANT.

I was tempted to employ the simple method recently suggested by Mr. Wharton Simpson, and carried out by Mr. W. Bedford, to obtain prints upon plain paper, by making use of the reverse side of an albuminized sheet, and I was truly astonished at the vigour of the pictures produced in this manner upon paper which had received no direct treatment with a salt. Ought we not to conclude from this result that the salted albumen film, which is supposed to produce an even and *impermeable* surface, preserving the photographic image upon the exterior of the paper, scarcely fulfils the object for which it is destined? for owing to the structure of the paper, and, perhaps, also to the penetrating faculty of the albumen, the latter invades the interior of the paper, and causes therein the formation of the image. Desiring to make a few comparative experiments on this point with other films, I coated in a similar manner some pieces of plain paper with arrowroot, algeine, and gelatine, and sensitized them upon the unprepared side. The prints obtained by this mode of proceeding, although more or less defined according to the quantity of the salt, had evidently penetrated less into the paper than was the case when the albuminized material was employed; for when examined against the light they did not exhibit the vigorous transparent effect always obtained by printing upon the reverse side of albuminized paper. In the latter instance the image, viewed by transmitted light, has almost the same appearance when seen from either side indiscriminately; such, however, is not the case with pictures printed upon paper prepared with other films, which present precisely the same aspect, when held to the light, as that displayed by a print of the ordinary kind; that is to say, on examining the image from the reverse side a certain thickness of white paper is observed which has not been acted upon by light. At the same time it should be remembered that the amount of transparency depends upon the thickness of the paper, and also upon the nature of the material used for coating the surface, which is thus rendered more or less opaque; arrowroot and gelatine appeared to me to fulfil the purpose better than algeine.

The institution of another experiment will be found interesting in reference to this subject. When the paper has been salted upon one side and sensitized on the other (as in Mr. Bedford's prints) place the negative, not in contact with the sensitized surface, but against the salted one; the printing in this case will proceed very slowly, and the finished result will be a very weak one, when examined by reflected light, presenting all the mealy appearance of a print produced upon the wrong side of the paper. The image will be found to have been formed in the centre of the paper, and appears remarkably vigorous as a transparency. In this manner, therefore, veritable transparent photographs may be produced, the pretty effect of which I have made use of for some time past in the ornamentation of screens, lamp shades, and other little pieces of furniture.

I will now ask, what are the conclusions to which we have been led by the results of these experiments? In the first place it seems fair to assume that if plain paper yields more permanent prints than albuminized paper, it is because the film upon the plain material compels the formation of the picture more upon the surface, and does not allow the image to sink into the body of the paper as is the case when the penetrating albuminized compound is employed. This way of reasoning is in accordance with the theory which has always attributed more permanency to a surface-printed picture, but, on the other hand, my practical experience teaches me that the transparent pictures of which I have just spoken are likewise endowed with good keeping qualities; for during the several years that I have had the transparencies in my possession I have not observed one single sulphur stain or alteration of any kind upon them, although, in these instances, the image is situated as nearly as possible in the middle of the paper. Is it therefore the albumen which is alone at fault? According to my belief, the reason why my transparencies keep well, although produced upon albuminized paper, is because, as with Mr. Bedford's prints, the pictures have been obtained on the back of the albuminized paper, and have thus escaped the clutches of the enemy, an expression which I may be permitted to use, as it is perfectly in accordance with the facts of the case; for if we examine with care prints of this description, it will be observed that the image has been formed quite out of the province of the albumen which remains above the print, covering the latter like a varnish. It is for this reason that I predict an equal degree of permanence to pictures produced by the process suggested by Mr. Simpson, although I look upon the method merely in the light of an ingenious makeshift, for it is always preferable, in my opinion, to use a plain paper specially prepared for the purpose.

It is because I consider all questions relative to the permanence of prints produced by means of silver salts are of great importance that I have made these imperfect observations, in the hope that those more learned in the matter than myself may be induced to occupy themselves with the subject. In the meantime, by way of returning to practical details, I will briefly describe a method of producing many useful little articles of furniture with the aid of transparent photographs.

To obtain good transparencies it is necessary, in the first instance, to select a thin paper of a pure white without spots or defects upon the surface. A rose-coloured albuminized paper will also give good effects, and I always prefer to use an albuminized surface, because the image is rendered more vigorous by being arrested at the back of the film, and also because the brilliancy of the latter helps to reflect the light; with ordinary paper the result is much more dull and flat. The paper is sensitized in the ordinary way upon the albuminized surface by floating upon a 12 or 15 per cent. bath, and the reverse side is then placed against the negative. It is necessary to print thoroughly in order to get a vigorous image. A toning bath which preserves the brown tints is best suited for these kind of pictures, as black tones appear cold and disagreeable by transmitted light, and the fixing must be as powerful and complete as possible, in order to impart the highest degree of transparency and equality to the pictures. After being thoroughly washed, the prints are dried, rolled, and flattened between two sheets of glazed cardboard.

A sheet of dark-coloured, opaque cardboard is next taken, and openings cut into the same in the shape of medallions, or any other form; into these are fixed the pictures, care being taken that the albuminized surface is inside. For lamp shades a dark green card should be chosen. The shades may be constructed of a rounded form, but it is better to have a flat surface where the photograph is placed, the latter, when mounted, emitting a soft light very grateful to the eyes, and, at the same time, recalling to mind some favourite landscape or familiar face; for although the grain of the paper is less favourable to the production of portraits, these may also be obtained by selecting a paper specially suited to the purpose.

I do not know whether this mode of printing has ever been before described; at any rate, I have not read of it anywhere; and yet the most beautiful effects may be obtained by its means. I am confident that those who will make a few trials of it will not repent the time thus expended, and will be glad to have seen these remarks.

Lausanne, 12th January, 1869.

[Nothing can be more beautiful than the charming prints illustrating this process, and their use for lamp-shades, with which M. de Constant has favoured us.—Ed.]

A DEVELOPER GIVING INTENSE AND HARMONIOUS NEGATIVES.

BY CARL MEINERTH.

Accompanying a number of his charming "Mezzotint Photographs," Mr. Carl Meinerth sends us his formula for development, by which he secures harmonious negatives without intensifying. Besides the interest of the pictures sent as illustrating the value of printing through a medium, they are exceedingly fine specimens of photography, and manifestly produced from fine negatives, at once brilliant and full of detail. He says:—

"If my prints please you, may I offer you and your readers my constant developer? I do not believe in redeveloping and intensifying, having tried all intensifiers, from pyro to that producing a scarlet negative. Pyro is the only one to which I resort, if I must, as in cases with children or insufficient time of exposure. I proceed as follows:—

"In a large jar keep 1 pound of protosulphate of iron and 1 pound ammonio-sulphate of iron mixed, and covered with water. Shake up, and keep under water, to keep a saturated solution always on hand.

"In the morning, take 2 ounces of this and add to it 3 ounces of acetic acid and (if the bath requires it) 1½ ounces of alcohol. Throw all this on the filter, and add 16 ounces of water. This is the developer for the day (in quantity to suit). Pour it on the negative slowly like collodion, and let it stay, moving the plate. Wait—wait—wait! How beautiful it comes out! all detail is out, intense enough.

"In dark days, and in winter, I add to this developer 1 ounce of the following organic solution:—

White sugar, syrup, or honey... ...	1 ounce
Acetate of soda	1 ,,
Water	4 ounces.

"Our brethren in the art who have a commonly good collodion, bath, and lens, will find this developer a very handy and reliable friend. No more mercury, scarlet, russett, and other intensifiers."

DRY PLATES AGAIN.

BY CHAS. WAGER HULL.*

Much has been said for, and very much more against, this class of photographic work; those who speak for it speak from experience, those who speak against it speak from theory, far oftener from prejudice; consequently, it has not grown in photographic favour as rapidly as it should.

Some of your readers may wonder why I am again espousing the cause of a process (tannin) which they believed dead and gone years since. I will tell you. I have discovered another merit it has—one, so far as I know, not equalled by any other—to wit, the preservative, for a tannin solution once made is good until used; consequently, you are always ready to prepare tannin plates. Need more be said?

A few days ago I had a friend request me to make for him quite a number of glass transparencies of a label. I informed him that I had but three plates which I could spare, which were upwards of three years old; so, on these I made for him three transparencies. They were just what he wanted, and were very fine. Since then I have prepared twenty other plates (in an hour and a half), and, in their preparation, used a tannin preservative which was compounded in May, 1866, and each plate is as good as any I ever made.

The solution was made as follows :—

Water	80 ounces
Tannin	500 grains.

Dissolve and filter; after which add 20 ounces of alcohol. The solution is as good as when first made, clear rich wine-colour, and absolutely free from mould or scum. It is well to understand that it was kept in a cool place, and was tightly corked.

I have often exposed tannin plates two years old, and some over three years, with uniform success, and now have nine stereo plates over five years old, upon which I am confident I can produce as many good negatives. Is there any other process of which this can be said? If so I would be pleased to hear of it, and of any advantages which it may possess over the much-abused tannin process.

Various have been the efforts, endless the suggestions which have been made, for dry-plate photography. Among the preservatives let me name a few of the most singular, without any regard to their merits, but only to prove that "all hands and the cook" are busy trying to "better things," and, by these efforts to improve, admit that the "dry" is a most useful process so soon as they succeed in making it just what they want it to be; but, so far as I am yet informed, it has not improved much from their doctoring, all things considered.

Not satisfied with experimenting with "things" which kill and destroy life, experimenters have rushed madly into the kitchen and the butler's pantry, and seized upon tea, coffee, sugar, gelatine, ale, beer, porter, claret, and one extra ambitious chap—I have forgotten his name—took the bitters which he had purchased for his morning "cock-tail," and, by its use, reported that his negatives were superb.

Fate has been against dry plates, and one principal cause of their unpopularity can be easily traced to this fact: about the time of the introduction of tannin plates by Major Russell, the short-focus, small diaphragm lenses were introduced, and, by their greater field and depth of focus, at once becoming popular for out-door work, they served to condemn dry plates, for the reason that, with such lenses, the time of exposure was much too long for many kinds of pictures; all of which is quite true.

If we use for ordinary landscape views an old-style achromatic meniscus or view lens, and for architectural subjects one of Dallmeyer's rapid rectilinear lenses, we will be able to use dry plates. I am the fortunate possessor of such, and do not hesitate to assert that, with the last-named, a negative can be made in ten seconds, when the light is good and bright, on a tannin plate. What more can be asked?

To such as may be using dry plates in this cold season of the year, and who are not very conversant with their peculiarities, I beg to state that, in their wetting for development, indeed, in all their treatment during each portion of the process, the water used should be heated to at least 80° (or, better, 100°) of temperature Fahrenheit. If used as it now comes from the pipes, the plates will not develop properly.

If photographers would only consider all the little chances of improving their business which are studied by the business man in his efforts to increase and extend his list of customers, they would be vastly benefitted; for some reason they do not, for, as a rule, they have not been educated as business men.

Should it ever be my lot to possess a gallery, I would have hanging at my door and in my reception-room a series of views of the town in which I was located, of its neighbouring "beauty spots," such as waterfalls or pretty wooded streams, of the residences and grounds of the handsomest villas within its limits, not alone for sale to my visitors, but that they might be informed that I was quite as ready and able to photograph their homes as their faces.

To do such work I would have on hand, ready for use on the instant, a stock of dry plates and a proper lens, and am certain that, by a little enterprise in this direction, my business would not only be increased at once, but that my reputation would grow rapidly, my advertising being done cheaply and thoroguly all the country about. There is not a country villa, or scarce a farmer's home in the whole land, which could not be photographed by the local photographer, especially when personally known to the owner thereof, if such owner was applied to and good evidence given him by an exhibition of other work of the kind, that the photographer was qualified to prove his claims to ability to perform.

A good view-lens can easily be made of the back lens of any portrait combination tube by using it alone, and reversing it, and by placing the diaphragms in front. This will answer for ordinary landscape work, where architectural subjects are not a prominent feature, and are not far removed from the centre of the plate. The back lens of a half-size portrait tube so used should cover an 8 by 10 plate well.

In landscape work, as in all other from life, the larger the opening that can be used the better, not alone that it reduces the time of exposure, but gives a better picture; for just in the ratio of the increase of the volume of light passed by a lens will the picture improve in brilliancy, and the shadows and dimly-lighted details be "worked out," without which your negative will be hard, and far from pleasing. With very small openings it is impossible to work into deep shadows by any process, wet or dry, no matter how long the time; as, with such, the illumination is so feeble that such details are not thrown upon the plate at all; every deep shadow is but a blank mass or black patch in the print.

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* *Philadelphia Photographer.*

PHOTOGRAPHY AND THE MAGIC LANTERN APPLIED TO TEACHING HISTORY.

BY SAMUEL HIGHLEY, ESQ., F.G.S., ETC.*

Argand Burner.—We have tried to improve on the old-fashioned camphorized sperm oil lamp, and to this end have employed paraffine oil, which gives a most brilliant light, but has the drawback that the vapour from the wick evaporates and covers everything within the lantern with an oily dew when not in use, and the oil itself oozes through the slightest flaw in the metal-work of the lamp, and produces a result alike unpleasant to smell and touch. If the lamps are constructed so as to place the reservoir outside the lantern, and proper samples of oil are employed, paraffine is perfectly free from danger. The pleasantest way, however, is to use the crystallized or solid paraffine. This gives a pure white brilliant light, is perfectly free from smell or danger, and if spilt immediately solidifies, and can then be peeled off anything it settles on; the only drawback is, it takes a long time to melt a mass of it, and this is not always convenient. Where house-gas is always attainable, a naphthalized argand burner furnishes one of the most convenient lamps for all ordinary purposes, as it gives a brilliant light, requires no trimming, and is ever ready for use.

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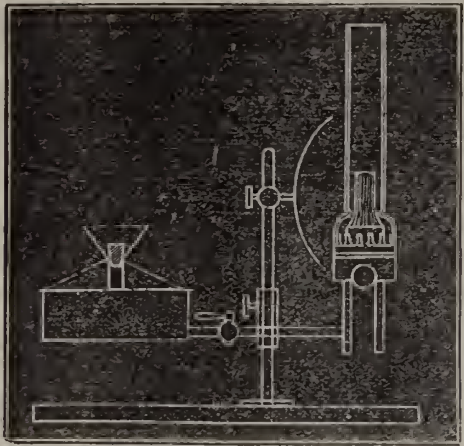
* Continued from p. 55.



Magnesium Lamps.—This source of light has attracted considerable attention, as it emits a most intense beam; but, though from its richness in actinic rays it is admirably suited to the requirements of photographic enlargement, it has great drawbacks when applied to the exhibition of magic lantern pictures. Firstly, the dense white fumes must be removed by a cumbrous arrangement of stove-pipes, for, as yet, we cannot absorb the vapours, as generated, by any practical chemical arrangement; secondly, the light is a flickering one, and a dancing landscape is not a pleasant thing to contemplate; and thirdly, the characteristic blueness of this light injures the tone of such pictures as require copper-coloured skies or red sunsets; for it must be borne in mind that we cannot be always showing plain photographs or coloured moonlight, ice, and snow scenes, for which, on the other hand, it is well suited. Two forms of magnesium lamp are now in the market: in one a ribbon of the metal is burnt, in the other magnesium powder mixed with sand falls on the flame of a spirit lamp or gas jet. This is known as Larkin's patent.

Oxyhydrogen Light.—The oxy-spirit and oxy-house-gas jets still retain their old form, but the myth of "safety jets" is passing away—that is to say, the notion of securing safety by wire gauze or water chambers—as cases are on record where the mixed gases have passed back and exploded in the reservoirs. The whole secret of safety lies in a nutshell. Keep the oxygen and hydrogen in separate bags; always have sufficient and equal pressure-weights on both bags, and never remove the weights from either bag while the gases are burning. I am now referring to all forms of jets where the gases are mixed just before they issue from the nozzle, and impinge in an ignited state upon the lime ball. If the above rules be followed, it is better to employ jets freed from all the impedimenta of longitudinal wires and cross fences of wire gauze, or safety-valves of other constructions; to paraphrase the well-known order, I would say: "Put your trust in Providence, but keep your pressure up." The bore of the nozzle, in relation to the pressure employed, is a matter of importance in the proper construction of a jet; for, if too large, the gases run back and burn within the nozzle tube, often causing a series of sharp explosions, which, if not dangerous, are unpleasant to the ears of a nervous exhibitor or of the audience.

Condensed Gas System.—Undoubtedly the usual arrangement of gas-bags, pressure-boards, and weights, is a cumbrous one, though presenting advantages to the travelling lecturer in other ways. The Americans have lately advocated the method of condensing the gases in metal bottles, as presenting the advantages of compactness and extreme portability, economy, with the greatest amount of pressure attainable, which, in other words, means security from the gases mixing, running back, and exploding, and also increased intensity in the light produced. By this arrangement the gases may be kept at hand any length of time, and ever ready for use, which is not the case when the gases are stored in india-rubber bags, for by an endos- and exos-motic action, they pass through the pores of such receptacles, and become deteriorated and unfitted for use in the course of a few days. As regards comparative space occupied, while a single gas bag of 6 cubic feet capacity within its pressure-boards would measure 36 by 24 by 24 inches when filled, and its weights 17 by 6 by 5 inches, a pair of 6 cubic bottles would only occupy a space of 30 by 12 by 6 inches when packed in a stout travelling-case. As regards comparative cost, a stout gas bag with pressure-boards and weights would cost £4 14s., while a bottle in case would only cost £2 12s 6d.; and the bottle will not wear out, while the gas bag must every now and then be replaced. As these bottles must be sent to the manufacturers to be pumped full, the cost of the generating apparatus is also saved. This leads us to the only drawback to the system; the bottles must be sent to be re-filled, as the pumping apparatus is costly, and requires the greatest care and experience in manipulation; in fact, the only danger in this system occurs at this stage of filling. But though, undoubtedly, this is a drawback to those who have to lecture night after night, the amateur, on the other hand, would regard the saving him the trouble of making the gases as an advantage; and he has only to make a point of returning the bottles to be re-filled immediately after each exhibition to obviate this one drawback, especially as he can obtain the gases cheaper than he could make them for himself. To the photographer this form of apparatus presents great advantages for enlargements, being ever ready for use. But this system is not a new one, for it was employed twenty years ago by Mr. Adams, the well-known lecturer on astronomy and physics. A pair of condensed gas bottles are before you, so that you may judge of the intense light obtainable. They consist of wrought-iron cylinders, 2½ feet 3 inches long by 4½ inches in diameter, capped with most carefully constructed valves worked by lever regulators, and are capable of holding 6 cubic feet of condensed gas. These are tested before sale to 60 atmospheres, or a pressure of 900 lbs. on the square inch, and as the pumping pressure seldom exceeds 25 atmospheres, or less than half the test pressure, perfect immunity from danger is insured. *A priori*, we should fancy that as the pressure is always on the decrease, the light would also be decreasing, unless the valves were under constant regulation; but practically this does not happen, for, if properly manipulated, we have not to alter the taps more frequently than with the gas bag arrangement. The 6 cubic feet will last two hours, though by careless working they might be used up in twenty minutes, or even in as many seconds.

Lime Balls.—Though some samples of lime will last one, two, or three exhibitions, as a rule it is so hygroscopic that two must be used during one lecture, and if not kept carefully excluded from air by packing them in close-fitting tubes—and even then I have known them to swell and burst open the receptacle—wrapping them in waxed paper, or covering them with a thin skin of india-rubber by dipping them in a solution of rubber in benzole, they will swell and fall to pieces. To obviate this, magnesia has been proposed as a substitute. I have tried a composition of magnesia and plaster of Paris, but before the mixed gas jet it fused and frothed up, unless mixed with a saturated solution of bi-silicate of potas, which, however, imparted a pink tint to the flame; the same with meerschaum, a silicate of magnesia, producing just the opposite objection I raised to the blue magnesium light; probably pure magnesia, greatly compressed by a powerful hydraulic press, would produce the desired material, but it is difficult to obtain the use of such a costly machine for this purpose. Lastly, we have heard a great deal about the employment, in Paris, of a zirconia cylinder, which is said to be superior, not only as to its incandescent qualities, but as to its indestructible nature—a most important property, as it would save the expense not only of a multiplicity of cylinders, but of the lime clocks we are forced to employ when great pressure is used with the mixed gases, to prevent the cylinders pitting, and so getting out of focus of the optical part of the lantern. As yet I have not been able to obtain a specimen of these zirconia cylinders, or I would have shown their qualities.

(*To be continued.*)

TESTING THE STRENGTH OF ACETIC ACID.

In attempting to determine the strength of acetic acid by means of the hydrometer, it will be remarked that certain anomalies present themselves; thus, there is no difference in the specific gravities of acids containing respectively 53 and 100 per cent. of true acetic hydrate, both having precisely the same density, 1063, at 60° Fahr. (water = 1000). The heaviest liquid acid is that containing 80 per cent., the specific gravity of which is a trifle over 1073; but from this point upwards to the acid of 90 per cent. there is no appreciable difference in the gravity. Again, a sample weighing 1067 may either represent an acid of 60 per cent. or may contain as much as 98 per cent. of true acid. It is, therefore, customary to guarantee the highest degree of concentration by specifying the temperature at which the acid becomes solid, or, rather, the highest point at which the already glacial acid resists liquefaction. Another guide which may often prove serviceable in the identification of an acid which, although of a high degree of concentration, is not actually glacial, is the fact observed, we believe, independently by M. Berthelot and Mr. E. Chambers Nicholson, that such acid becomes inflammable when the temperature is raised to the boiling point. If we take, for instance, about a drachm of the acid of 95 per cent. and heat it in a test-tube to the boiling point, it will be found that the vapour takes fire on applying a lighted match, and burns steadily as long as the ebullition is maintained; if, however, 10 per cent. of water be mixed with the sample, there will be great difficulty in causing inflammation, and the vapour, when ignited, will only burn with a lambent flame of pale blue separated cones, whilst below this strength the acid vapour is altogether uninflammable. By this test, then (avoiding a too prolonged ebullition, which increases the strength of a weak acid), we have a ready means of estimating the quality of liquid samples of a high degree of concentration without resorting to the more tedious method of acidimetry.

It has only to be stated, in conclusion, that the boiling point of the ordinary qualities of acetic acid, although higher, is so little removed from that of water, that the indications of the thermometer are not much more to be relied upon than those of the hydrometer. In many respects carbolic acid imitates the deportment of acetic acid in the characters above described; it likewise becomes glacial upon separation of the last traces of water.—*The Photographic Journal.*

Correspondence.

QUICK AND SLOW DEVELOPMENT—PERSULPHATE IN THE DEVELOPER.

Sir,—I notice in a contemporary an article on a novel action of persulphate of iron on silver, in which some views are put forth on the subject of development and the action of the persalts of iron in that process which appear to me to be exceedingly novel. If the writer in question is right in his statement as to the effect of persulphate of iron in the developer, then, I fancy, the commonly-accepted notion of its effect must be wrong; but if he be in error as to the question of fact, and misconceives the real effect of the persulphate, then the theory built thereon is ingenious but baseless. The statement I question runs as follows:—

> "With a new and energetic developer, even in the presence of a full amount of restraining acid, the deposition of silver on the lights of the negative takes place very rapidly, thus soon exhausting the silver carried by the plate, while the half-tones, owing to their more feeble definition, have failed to attract the notice of a sufficient quantity of the falling silver. We know that silver, when precipitated with moderate rapidity, always selects the more prominent portions of the image for attachment, in preference to the less marked lines or points."

The writer then goes on to remark that an old iron solution containing persulphate, by working slowly, gives more half-tone and less tendency to granularity. Now, the latter statement appears to me, as well as all the rest, utterly opposed to experience, and, I believe, to recognized scientific principles. I believe it is generally accepted that rapid and energetic reduction produces an amorphous deposit, and slow reduction a granular or crystalline condition. I know that in my own experience I prefer a developer containing a little persulphate, because it gives me more vigour and cleaner shadows than a newly-mixed one, which generally has a tendency to give a thin, soft image, and, at times, to fog. This is, I believe, in accordance with general experience. Perhaps your contemporary, however, will more readily accept the authority of one of its own most able contributors, Mr. Carey Lea. I find in an article by that gentleman on development—in which, by the way, he attributes to Mr. Wharton Simpson the first recognition of the principle he proceeds to apply and carry further—the case stated so clearly, and, to my mind, so correctly, that I will venture, by your permission, to quote the passage:—

> "It is a general rule in chemistry *that the slower the precipitation the larger the particles precipitated are found to be.* When precipitation is exceedingly slow it frequently takes the form of crystallization, and the separating substance assumes forms of considerable size. Precisely the same thing, though to a lesser extent, happens when an ordinary precipitation is retarded; the particles that separate have time then, as it were, to find each other, and join together."
>
> "When an impressed plate is covered with developer, if that developer be a *weak* one—that is, if the precipitation of the silver be *slow* —the particles have, as it were, time to choose and attach themselves in preference to the strongly impressed part, whilst those portions of the image which have been weakly impressed receive less than their due proportion.
>
> "This species of development, therefore, tends to hardness and excessive contrast. When properly subordinated, it gives *brilliancy.*
>
> "If the same impressed plate be covered with a *strong* developer—that is, if the precipitation be a *rapid* one—the particles have less time to seek out the strongly impressed portions, but deposit themselves more uniformly. They thus tend, if this be carried to an extreme, to produce too grey and uniform a plate, wanting in force. When properly subordinated, this development gives *detail.*"

From this it will be seen that Mr. Lea says an energetic developer produces softness and detail, whilst your contemporary says it produces contrast and the absence of detail. Mr. Lea says a weak and slow developer produces brilliancy and contrast; your contemporary, that it produces softness and half-tone, especially if its reduced energy be due to the presence of persulphate. In my own practice I have always found that the greater the proportion of persulphate present the greater the contrast and the more sparkling and crystalline the deposit; and if the developer were very old and brown indeed, I could only get out high lights, very bright and silvery, without any detail in the shadows whatever. As the question of development is a most important one, I do not think that palpable error should be permitted to pass without question; and in asking you, sir, for some expression of your views on the question, permit me to disclaim any wish to dogmatize, on the one hand, or to carp for carping's sake, on the other. I hope that scientific discussion can be conducted without discourtesy and bitterness, although facts too often seem to be opposed to such an assumption.—Very faithfully, yours,—Veritas.

MR. SWAN'S CARBON PATENT.

Sir,—The plain English of Mr. Edwards's note in your last appears to be, that in the opinion of eminent counsel Swan's carbon patent is not valid. The disinterestedness of Mr. Edwards in publishing such an opinion is most extraordinary, inasmuch as it proclaims to the public that a carbon process, which renders that of Mr. Edwards quite unnecessary, is at their service, free from the trammels of the Patent Law. When I first read the specification of Mr. Edwards I had some thoughts of writing to suggest that the only points I could find in it not covered by Mr. Swan's patent were already well-known to the public; but in the face of such a disinterested aim to assist the public to Mr. Swan's process, without money and without price, on the part of Mr. Edwards, it would be ungenerous to criticise his own patent too closely.

There is just another boon—or, rather, an extension of that just conferred—which, on behalf of the public, I would venture to ask from him; it is this: that, as the opinion of counsel is necessarily very much influenced by the nature of the instructions and the facts placed before him, will Mr. Edwards publish the "case" submitted to counsel, and the "opinion" given, each in its entirety? If Mr. Edwards will furnish these, he will do much to satisfy the public as to its probable right to use Mr. Swan's process without his licence, and without serious risk of the terrors of the law.—Yours, sir, very truly, X. Y. Z.

SWAN'S CARBON PATENT, AND AMATEURS.

Sir,—Responding to Mr. Blair's wish to be informed as to the intentions of the Autotype Company respecting the use of Swan's patent by professionals and amateurs, I beg leave to inform you that while we consider it but fair and just that those who use the patent for profit should make some payment, we have no intention of endeavouring to place any restrictions upon the use of the process by amateurs, for in their case we consider that the purchase of the tissue includes the right of using it.

The various legal questions raised by your correspondents I need not here discuss. They are better left in the hands of our legal advisers, to whom has been confided the protection of our interests in the matter of Swan's patent.—I am, sir, faithfully yours,

W. H. Benyon-Winsor,
Chairman of the Autotype Printing and Publishing Company (Limited).
5, *Haymarket, London, S.W.*, *January* 3rd, 1869.

SECRET DODGES.—MINUTE YELLOW SPOTS ON PRINTS.

Dear Sir,—Permit me, through the medium of your pages, to tender my hearty thanks to Mr. Cherrill for the valuable information contained in his paper on Composition Printing. I beg, however, to enter my protest against the term "secret dodges" being used by photographers to any part of their operations, unless their operations are clearly proved to be "mean tricks," and such an appellation does not apply to composition printing, in any sense, in my opinion. The public have been too long allowed to believe that success in photography depends upon "secret dodges" instead of genuine artistic talent, developed by patient, persevering study, and much practice. Mr. Robinson has shown how easily he can prove the worthlessness of the opinions of the adverse critics, as not one of them discovered the trick—I will not call it a "dodge," as it was not a "mean trick"—I refer to the bit of garden mould being made to represent a rock.

I would now add a few words about those little troublesome yellow spots caused by air-bubbles in fixing, which make their appearance when the prints are washed, and about to be mounted. They troubled me very much during very cold weather which we had two years ago (they never troubled me at all in summer). I used strong soda, and sponged the prints, but still they were not thoroughly removed; they began to make their appearance slightly in the beginning of this winter, but have entirely disappeared since I adopted the plan of lifting the prints carefully from the water after toning, and dipping one corner into the fixing solution, and allowing the print to slide gently down into the solution face downwards. On turning the prints over after all have been put in, I scarcely ever see an air-bubble. If the prints are lifted from the water, and carelessly clapped down on the fixing solution, then pressed down under the surface, on turning then over they will be covered with air-bubbles, and it will be very difficult to prevent spots of imperfect fixation.—Yours truly,

Corry Square, Newry, February 1*st*, 1869. D. Welch.

OLD GOLD TONING BATHS.

Dear Sir,—Seeing in the report of the last meeting of the South London Photographic Society a doubt expressed by Mr. Davis as to whether any toning was effected without newly added gold, I beg to say that I still continue to use the carbonate of soda bath which I wrote you an account of now some five years ago, and which I constantly re-use, having only made one new one in that time, and then from an accidental contamination; and that it is my constant practice when I want to tone a few prints (say a dozen)—cartes—to put them into the solution without any addition of gold; and I never fail to get the required toning action.—I am, yours very truly, Farindon Lane.

Rotherham, 26*th January*, 1869.

THE VALUE OF RESIDUES.

Dear Sir,—A few weeks since I sent a parcel of photographic residues to a smelter in London; in return I received a certain amount of money. I feel that I have been cheated. What do you think? The residues consisted of three pounds' weight (avoirdupois) of sulphide of silver, and seven pounds' weight of paper clippings (sensitized) and filters. My sensitizing bath is never under 50 grains to the ounce. The three pounds of sulphide (?) I know contained at least 12 ounces of chloride of silver, which had accidentally got mixed with it. In return for the above I received the sum of £3 12s., being for fifteen ounces (no odd grains, &c.) silver at 5s. 3d. per ounce, less expenses. Do you think this fair value?—Truly, yours,

H. B.

[We print this letter instead of answering it in another column, because we believe that the cases of doubt and dissatisfaction—whether with or without reason we cannot say—in connection with this subject are very common. We know that reducers often find that material sent to them as sulphide and chloride of silver contain a great deal of dirt and extraneous matter, which, after they have had the trouble of removing, very materially decrease the weight of the silver salt. Refiners can easily make an assay of chloride or sulphide if it be clean and pure, and will often undertake to do so and report before reducing the bulk. Paper clippings, &c., are more difficult to deal with. Some photographers find it a good plan to divide equally a parcel of residues, and send to two different houses for reduction. The result is instructive.—Ed.]

Proceedings of Societies.

The Liverpool Amateur Photographic Association.

The Annual Meeting of this Society was held on the 26th January, at the new Public Library and Museum. The chair was taken, in the first instance, by the Rev. G. J. Banner.

The minutes of the previous meeting were read and passed.

On the motion of Mr. **Henderson**, seconded by Mr. **Green**, a vote of thanks was passed to Mr. Lewis Hughes, for his temporary attention to the duties of Secretary. The Association unanimously elected Mr. O. R. Green to the office of President in the place of Rev. G. J. Banner, who retires.

agreeable to both, will give her a deed of the house and lot on our wedding day; and, if not, she shall have for her guess every dollar I got by this advertisement. Address J. Grant, 49, Charlton Street, New York City."

Dr. Liesegang's Papyroxyle.—We have received from Dr. Liesegang several samples of his papyroxyle, which appears to be in many respects a great improvement on the ordinary soluble cotton. It seems to be uniform in quality, is extremely soluble, with 6 or 8 grains per ounce giving a collodion without residue, limpid, and textureless. We have not yet tried it for negatives, but understand that alone, or with a mixture of cotton, it gives great sensitiveness. For collodio-chloride it seems to answer admirably. We shall have more to say on the subject shortly.

New Method of Extracting Iodine.—A patent has been granted to M. Laurey, in Paris, for a new method of extracting iodine, and treating the salts derived from kelp. When the lixivium has been freed from the less soluble salts, and concentrated to a density varying between 45° and 55° Baumé, it may contain free alkali, carbonates, sulphides, sulphites, and hyposulphites of alkalies, as well as alkaline iodides and bromides. The treatment varies, according as it is desired to separate the salts contained, or to extract at once the iodine and bromine. When it is desired to extract the iodine and bromine at once, the liquid is saturated with hydrochloric acid; the deposit which forms is separated, and the gaseous mixture which is evolved in the reaction of nitric acid on organic matters (as in the preparation of oxalic acid, picric acid, &c.) introduced. When these gases are principally formed of binoxide of nitrogen, a quantity of air is admixed. The application of the nitrous gases may be made in several ways: sulphuric acid, in which nitrous gases have previously been dissolved, may be added to the liquid, or, when the liquor contains sufficient alkali, nitrous acid may be admitted as long as there is absorption, and any acid whatever added afterwards to precipitate the iodine. In whatever way one operates, the precipitation of the iodine is determined by the reaction of the nitrous compounds. The precipitation is complete, and the bromine is not set at liberty. When the iodine has been thus separated, the mother liquor is submitted to treatment, and the bromine extracted by the ordinary methods.—*Chemical News.*

The Photographometer.—This is rather an ingenious apparatus, designed by M. Chevallier, of Paris, who calls it a photographometer. It is destined to record the angular position of objects situated around a given point. It is self-recording or automatic, and very simple in construction, so that it can be easily used, even by persons who are unskilled in photography. The record is made by means of a kind of photographic camera, the ordinary objective of which is mounted vertically on a circular platform capable of rotating, by means of clockwork, in a horizontal plane. The image is formed on a horizontal plane, for the rays are deflected 90 deg. by a prism after they have passed through the objective. The sensitive surface over which they fall is a collodionized glass plate, the centre of which corresponds with the point at which the centre point of the diaphragm would be represented. To prevent a number of confused images, superimposed on each other, being formed during the rotation of the objective, an opaque screen, having a narrow oblong opening, the median line of which passes through the axis of rotation, is placed over the whole of the sensitized surface, and revolves along with the objective. The result of this arrangement is the production on the sensitized plate of images of the different points that lie around the observer, the angles formed by lines joining the centre of the plate and the different objects being exactly the same.—*Scientific Review.*

To Correspondents.

H. P.—We are not aware of any one who keeps sensitive collodio-chloride paper on sale in this country.

Salopian.—India-rubber has not been found successful as an adhesive medium for mounting photographs. Either starch, paste, or glue, or a mixture of glue and gum, will answer well.

H. R. (Openshaw).—We do not quite understand what you mean by the "brilliant positive coloured blue backgrounds" you desire to produce. Describe a little more explicitly to what you refer, and we will try to help you. Do you refer to paper positives or glass positives?—to plain prints with blue backgrounds, or coloured prints with blue backgrounds? Your second difficulty—your varnish drying dull—may proceed from several causes: it may be from insufficient of the gum resin; it may be from the use of weak solvents; or from the use of insufficient heat in varnishing. As a rule, we do not recommend amateur varnish-making. It often turns out costly, sometimes by spoiling negatives, sometimes by a batch of varnish being wasted.

A Folkestone Subscriber.—You are under a slight misapprehension. If you place the negative to be enlarged 10½ inches from a lens of 9 inches equivalent focus, and the focussing-screen or sensitive surface at a distance of 63 inches, you will receive on the screen or sensitive surface an image six times as large as the original. You have probably reversed the operation, in which case you would get an image one-sixth of the original size. 2. We cannot say with certainty, because we do not know the proportion of the chloride employed. Try adding half a dozen drops per ounce. 3. The formulæ for a gold and hypo bath vary much, and are a little indefinite, the rule of thumb having prevailed very much in their use. That given by Dr. Liesegang on p. 105 of our last Year-Book answers well; or, dissolve 1 grain of neutral chloride of gold in 1 drachm of water, and 4 grains of hyposulphite of soda in another drachm of water; mix by pouring the gold solution into the hypo solution, filter if any turbidity appear, and then add the whole to 10 ounces of ordinary fixing bath.

James Maycock.—The term preservative process has been used in contradistinction to dry process to indicate a process in which a substance is used which keeps the film moist or sticky; honey, glycerine, syrup, oxymel, &c., are substances of this kind. The oxymel we know will produce good results, and seems to answer well in your hands. 2. The addition of carbonate of ammonia or liquid ammonia to the fixing bath should secure more perfect fixation, and it should also prevent any decomposition of the hypo, and consequent liberation of sulphur. Still it is possible that imperfect fixation and also sulphur toning might occur in a bath to which ammonia had been added. We shall have pleasure in seeing the oxymel print. 3. Fuming excited paper with ammonia would undoubtedly tend to form oxide of silver, a result which would become evident in time by the brown colour; but the action is very slowly brought about when the fumes of ammonia are brought into contact with dry nitrate of silver. We regret that we have no dry-plate prints unmounted, and suitable for transmission by post, which we could with propriety regard as models of perfect dry-plate work.

Senrab Egroeg.—We cannot explain the cause of the film of your gum plate splitting. There are two modes, however, of preventing a similar trouble recurring. You may either use a varnish which does not require heat, which is unnecessary where the solvent is benzole or chloroform; or you may give the finished negative a coating of dilute albumen or gum-water before it is dried. This will generally prevent any splitting of the film after drying.

W. J. A. G.—We are glad to learn of your success with the gum plates. We quite agree in your estimate of the beauty of the negatives. You were fortunate in your instructor: one more accomplished and skilful, or more pleasant and agreeable, would have been impossible.

D. Welch.—Thanks. The advertisement you enclose admirably illustrates the beneficial influence of photography on portrait painting.

Amateur.—Thanks for your interesting communication, which shall appear in our next. Mr. Woodbury's process would doubtless admirably suit the purpose you describe. If the negative were sent to Mr. Woodbury, he could produce the printing plate from it, and it could be printed in Geneva; but as some skill and some suitable apparatus, &c., are necessary for the printing, it is probable that it would be wise to have it printed by Mr. Woodbury also, a few hundreds at a time as they might be required.

G. R. F.—The toning trouble you describe is a little inexplicable. The mealiness which characterizes the prints seems to be due to the presence of free chlorine in the toning bath, and would suggest that it had been used too soon after it was mixed. Did you wash the prints before immersion in the toning bath? We have long found that much washing before toning tended to the production of mealiness. In the sulphocyanide bath we believe there is a very perfect deposit of gold, and, of course, a good deposit of gold tends to stability in the print. The sulphocyanide toning bath *seems* an expensive bath, but if the gold be received by the print, and not lost or wasted, that is not a serious consideration. We shall be glad to hear more of your experiences in the matter.

Monochrome.—In a communication to our columns a short time ago, Mr. J. W. Burton, 3, Haymarket, Leicester, stated that a chemist in that town procured for him the amorphous albuminized paper in question, and that he would be happy to communicate the address to any one writing to him.

W. G. (Stradbroke).—If we understand you rightly, you think of having the end of the studio where the camera stands less lofty than the sitters' end, and you wish our opinion as to whether the point at which the height is increased should be glazed or not. In effect, this would give you a certain amount of high front-light. This might at times be useful, but its general effect would tend to flatness. It may be useful to have the portion glazed, usually keeping it covered with a blind, but using it when occasion required.

The "Echoes of the Month," and several other articles in type, are compelled to stand over until our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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"MEZZOTINTO-PHOTOGRAPHS;" OR, SOFT PRINTS OF RUGGED FACES.

We wish to call attention of photographers to some facilities they possess for the amelioration of the occasional undiscriminating harshness of photography, facilities with which most of our readers are familiar, but which few have tested. We refer to printing through a transparent medium interposed to prevent perfect contact between the negative and sensitive paper. The warmest and most eager admirer of sharpness, the most enthusiastic champion for the stern and simple truth of photography, must at times have met with a portrait photograph in which he wished wrinkles, furrows, and seams, pockmarks, freckles, and pimples had not been rendered with such preternatural vividness and cutting sharpness. We may assume that this much will be generally conceded, without the necessity of reopening the diffusion of focus controversy, or discussing again the relative advantages of sharpness and softness of definition.

A series of prints with which we were favoured a couple of months ago by Mr. Carl Meinerth very admirably illustrates the value, under some circumstances, of a softened definition. We mentioned, some time ago, that Mr. Meinerth had obtained a patent for the method of producing these mezzotint photographs in the United States. The legitimacy of the patent, which has been the subject of discussion in the States, scarcely concerns us here, seeing that the restriction does not affect English photographers. We may remark, in passing, however, that whilst the principle of "printing through a medium" for the purpose of securing softness has for many years been familiar in this country, having been prepared at different times by Sir David Brewster, Mr. Fox Talbot, Sir William Newton, and others, we have never seen its application efficiently tested until the specimens of Mr. Meinerth were brought under our attention.

Many of the prints before us have a singular charm peculiar to themselves: softness, roundness, and delicacy, without any appreciable lack of definition; and an unusual limpidity, or diaphanous character, resembling the effect of a picture on porcelain. We have, in the selection which Mr. Meinerth has favoured us, various degrees of the softening action, some illustrating its slightest application, barely modifying the keen definition in the negative, whilst others show its extremest effect, in which forms are as much suggested as defined. One example is especially interesting. We have mounted, side by side, a print from the negative printed in the common manner, and another with a liberal employment of the softening operation, in which the well-defined texture of a somewhat freckled skin gives place, without any loss of modelling, to the tender gradations seen in the face of a pretty girl in its first delicate bloom of youth and health.

There is, however, in most of the specimens, a quality which we were not prepared to find, and which we have since found, on experiment, to depend chiefly upon a right method of applying the principle. The peculiarity to which we refer is this: the sharp, black lines in the pictures are in almost all cases well-defined, the spreading or softening of the definition being chiefly confined to the whites and half-tones. The effect is in many cases that of a softy-defined picture with sharp touches in the parts most requiring well-defined rendering. For instance, the markings of the eye-lids, the nostrils, the mouth, and in the deepest shadows of the hair and drapery, rarely seem to suffer from lack of definition. This, as it will readily be understood, is a quality of great importance, as it materially affects both expression in the face and pictorial effect in the photograph. To the mode of securing this we shall refer shortly.

We have no specific information of the mode employed by Mr. Meinerth, nor to the medium used between the sensitive paper and the negative. In the specification, reference is made to the interposition of a "thin layer of mica, of glass, of a mat, or of a very short, transparent space, between the negative film and the material to print upon, whether the glass of the negative itself, or another translucent medium." But the nature of the medium and the mode of applying it are all-important in producing good results.

We have tried several materials. Paper made transparent by means of wax or varnish is one of the most obvious; but we find that in almost every instance the texture of the transparent paper-prints mars the delicacy of the result, that it retards printing considerably, and that its thickness is insufficient for any valuable purpose. We have tried mica, but, besides being only procurable in very small plates, we find that when introduced in sufficient thickness to effect any appreciable modification of the definition, the brown tint it possesses retards printing in a most serious degree, half-a-dozen of the sheets sold for photographic purposes, the combined thickness of which was not greater than that of a thin visiting card, increasing the exposure for printing to three or four times as long as the negative required without any interposed medium. A piece of thin glass between the negative and the paper we find answers best; but great care is required to select the glass perfectly flat, of the proper thickness, and to use it in a manner not to injure the negative.

Then the mode of using the medium is most important. A very thin medium interposed between the negative and the paper is quite sufficient, if the printing be conducted in diffused light, to blur and spoil the definition generally, without producing the beautiful effect which we have described as present in the prints before us. It is necessary that the printing should be effected by means of direct rays, which shall suffer as little divergence as possible after passing through the negative. We find that by interposing a plate of glass of one millimetre, or about the twenty-fifth part of an inch in thickness, and printing in direct sunlight, a good effect may be produced with a quick printing negative. But the slower the printing the greater the softening effect; because if the frame be exposed to direct sunlight, in an open place, a large amount of diffused light from all quarters is passing obliquely through the space between the print and the negative, spreading and blurring the definition seriously. If, however, the frame be placed in a position facing the sun in the angle of two walls, so that it is sheltered considerably from diffused light, the effect is considerably modified.

The best effect we have produced, however, was by placing the printing frame in a box just large enough to receive it, and about eight inches deep. By the aid of this arrangement very few but direct rays reach the negative, sufficient light reaching it obliquely, however, to pass slightly under the negative, and so spread the definition. It is by attention to this part of the operation that the good definition of the dark portions of the picture which we have mentioned is secured. If the rays of light strike the surface of the negative perpendicularly, they will pass through the transparent parts with little divergence, and the portions which rapidly blacken will show but little blurring. In passing through the denser portions of the negative space beyond, the light is more spread or split up by the multiplicity of intervening particles, and its softening effect is much more apparent. If a negative be too soft to bear direct sun-printing, diffused light may be used; but a deeper box will be required, so as to limit still more the amount of light which reaches the negative obliquely.

But it will be seen that the character of the negative, the character of the light, and the kind of result desired, as well as the thickness of the medium and depth of the box, must all be carefully considered in relation to each other in securing the best results. Experience will be necessary to obtain the greatest success, and although this mode of printing may only be necessary or desirable in certain cases, yet, we think, that for getting rid of the harshness with which photography renders some faces, the method is well worthy of the consideration of portraitists. In regard to freckles, &c., it should be remembered the rendering of photography is not true, but often untruthful and harsh exaggeration.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Plain or Albuminized Paper—Photographic Secrets and Combination Printing—Carbon Patent Litigation—Art Photography—Mechanical Printing—Societies.

I remember seeing it stated, some time ago, in a very exhaustive article in the *British Quarterly Review*, on photography, that an average of not less than "six millions of inchoate fowls are sacrificed annually" in the United Kingdom alone in producing albuminized paper for photography. As a rule, I have a horror of statistics, and would willingly endorse Canning's paradox, to the effect that there is "nothing so false as facts, except figures"; but I cannot help thinking that a very pretty and interesting problem is here presented to the political economist as to the waste of the food of the people, especially if the fact be added, that the result of this sacrifice of embryo fowls is simply to make photographs vulgar and unstable. The *Scientific Review*, referring to the recent efforts of the Editor of this Journal to secure for plain paper another trial, may well exclaim: "It is surprising that millions of eggs should be taken yearly for the purpose of coating photographic paper with a perishable substance." It is a very singular thing that the majority of the best photographers readily confess, in private conversation, to a preference for plain paper prints, and yet so few of them ever attempt to produce their own works on anything but albuminized paper. A conviction prevails that the public likes albuminized paper, and that the public must be supplied with what it likes. It seems to be overlooked, however, that the public has been educated into liking the glossy surface. Much of the pictorial education of the public, of late years, has been of a photographic character; and hence a taste for vulgar gloss, for cutting sharpness, for meretricious and incongruous backgrounds, and other abominations, has been to some extent infused into the common mind. But photography can undo the evil it has done: if its best and most capable men will steadily produce and issue, for a time, only such things as they themselves believe to be artistically good, without any *arrière pensee* as to the relation between public taste and personal profit—and the latter would, I believe, eventually be increased rather than sacrificed—I am satisfied that photography will materially aid a higher pictorial education, and, in the course of the effort, plain paper printing will once more take position. I have heard it said, more than once, that vested interests stand in the way: that albuminized paper manufacturers will use their influence against the revival of plain paper. I do not attach importance for a moment to such an idea. If plain paper were once more in vogue, the preparer of photographic papers would probably be kept more busy than before. To produce the best results, all plain paper will require some preparation; and if albuminized paper manufacturers will put the same skill and enterprize into the preparation of the various kind of plain papers, with resin, arrowroot, Iceland moss, gutta-percha, or other similar substances, their craft will be in no danger, and photography will be greatly their debtor.

It was scarcely an edifying fact that a communication should appear in two journals, in the year of grace 1869, advocating the maintenance in photography of "professional secrets," and belauding a foolish observation, to the effect that photographers did not tell all they knew, as a "great truth." I regard such an observation as a foul libel instead of a great truth. I think it is one of the glories of photography—and especially of English photography—that it has established a sort of community of knowledge amongst all associated with it, and they have realized the olden and sacred proverb: "There is that scattereth, and yet increaseth." It is the divine prerogative of knowledge that it is not diluted or weakened by diffusion. The more it is spread the more potent it becomes. A secret, on the other hand, is, as a rule, the most worthless thing a man can possess. It cannot be made to fructify properly, because it must be so jealously guarded and cooped up. He who makes a discovery and patents it does a straightforward and justifiable thing. The discovery may have cost him time and money; and it is only fair that he should be recouped; and to this end the Government grants him a monopoly of his discovery for a limited period. But publicity is the final result and aim of the whole. Secrecy impoverishes a nation; publicity to discoveries enriches a nation; and in order to encourage publicity, patents are granted. But the express condition of the protection which a patent gives is the fullest publicity and explanation of the discovery, in order that it may become germinal, and so develop and increase the national stock of knowledge. I have heard of persons narrow and foolish enough to think that it was possible to gain the protection of the patent laws, and yet remain the sole repository of their own secrets. It is scarcely necessary to say that a patent the chief element in which is still kept secret is worthless.

To return, for a moment, to the subject out of which this protest against over-communicativeness arose—I mean Mr. Cherrill's paper—I think that photographers generally will thank him heartily for the full and unreserved character of the information it contained. I, for one, learned several things, in listening to the description of the printing of "Watching the Lark," which I did not know before, and I believe that nothing would so conduce to the interest of photographic societies as the frequent reading of such papers. To treat the joke of introducing a piece of garden mould to take the place of a rock in the foreground of an individual print, for the purpose of testing the perspicacity of would-be critics, as if it were a deliberate falsification in art, or an attempt to justify such falsification, is the sheerest nonsense.

It would almost seem as if a photographic patent was about to be litigated at last. Hundreds of photographic inventions have been patented; almost as many have been pirated; but I do not remember that in any instance litigation has followed. But the preliminary shots in the shape of letters and advertisements on Swan's patent which have recently appeared seem to portend actual war. It is not likely to be a contest, however, in which the public will feel the deepest interest, since it is not a case in which the public interest *v.* private interest will be tried, but rather, so far as I can see, the personal interests of rival patentees. As photographers are much indebted to Mr. Swan for the undoubted impulse he has given to carbon printing, and for the undoubtedly excellent way he has shown, I presume that the public would be sorry to see him, or those associated with him in his patent, made the sufferers in such a contest, nor is there, I should think, much risk of such an issue.

The odd origin of proposals for taxing photographs, recently facetiously described by the Chancellor of the Exchequer, was suggestive of the origin of some other things. Mr. Lowe intimated that when some one to whom nature had not granted personal attractions had suffered severely from the uncompromising and literal truth of photography, he felt a relief in writing to the Chancellor of the Exchequer to suggest the imposition of a tax on photographs. The suggestion is not made in the interest of the state, but from a certain spite against photography. It has struck me that a similar animus, from slightly different causes, has actuated those who attack art photography, and especially combination printing. They have tried and failed, hence the thing is impossible or worthless. The recent writer in the *Gentleman's Magazine*, who, in the main, wrote like a gentleman, made the fatal admission that he had tried to produce an art photograph, but he failed, and hence his faith in the thing was shaken. Others whom I could name—two or one—who write with less ability and more *malus animus*, failed to produce anything presentable in photography of any kind, still less in art photography, and hence find some satisfaction in detracting that which is beyond their reach.

The progress of mechanical printing is one of the most hopeful and interesting developments of the art. The examples of Herr Albert's process which I have seen are marvels of excellence, especially in delicacy, an element which in most previous attempts of the kind has been singularly wanting. So pure and delicate are the flat tints of Herr Albert's prints that it is difficult to believe they are not due to some chemical operation rather than to mechanical printing. I presume that we shall hear more about it in due time. Mr. Woodbury's process, I am glad to learn, is in full operation again, and likely, I hope, to be a permanent success. In some, at least, of its operations it is not likely to suffer from competition. Some of the glass slides for the lantern produced by it rival the finest effects produced by any process of silver printing.

At the Photographic Society of London the proceedings were unusually interesting, and a finer display of examples of combination printing was placed before the members than we have ever before seen at one time. The early examples of Mr. Rejlander's work, and the late examples of Mr. Robinson's, and the best of the results in the intermediate period, formed a collection of rare interest. It was pleasant to see Mr. Rejlander, a veteran in art photography, standing up to encourage younger disciples, and defend the method under discussion against the attacks of the ignorant and incapable.

The North London meeting would have come too near to Christmas-tide to have a chance of success, and was therefore abandoned altogether.

At the South some interesting conversation arose out of the queries in the Question-Box.

Some of the provincial societies have had interesting meetings, but they do not call for especial note.

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COPYING AND ENLARGING BY MAGNESIUM LIGHT.

BY JOHN CARBUTT.

About this time last year I made some experiments in copying and enlarging by the aid of magnesium light, more particularly in enlarging by the development process from small negatives, and with a success quite encouraging. The result of these experiments has enabled me this winter to make use of the magnesium light in such a variety of ways, and, in every instance, with such satisfactory results, that an account of them may prove of interest to the readers of the News.

I use the American Magnesium Company's lamp, made for use in the magic lantern, burning but one strand of ribbon at a time. I place the lamp in a wooden box just large enough to easily admit it; the front of the box carries a 4½-inch compound condenser, formed of a double convex and a deep meniscus, made for me by Mr. Herman Roettger, of Philadelphia. This form of condenser, I am satisfied, is the best for use with the magnesium or oxyhydrogen light for photographic purposes: repeated trials have shown me that from twenty to thirty per cent. more light passes through the lens than in the old form. In front, and close to the lantern-box, I place a small camera, from which the lenses are removed, and a carrier for the negative substituted; the lens is adjusted on the back of the camera in place of the ground glass; both camera and lamp-box are temporarily fastened to the work-bench or table. The fumes from the burning magnesium are carried off by a flexible tube, supplied with the lamp. This constitutes the arrangement for enlarging. Place a negative in the holder, light the wire of the lamp, at the same time start the clockwork, and quickly adjust the focus on the paper for the enlargement; having done so, stop the clockwork, and proceed to sensitize the paper (it is, of course, understood this must be done in a room from which white light is excluded); place the board holding the sensitive paper in position (I use a piece of yellow glass in front of the enlarging lens, so that on starting the lamp again I am enabled to see if the image is properly adjusted on the paper), remove the yellow glass, and allow the light to act from one to three minutes, according to the size of the enlargement and intensity of the negative; place the cap on the lens, and examine the sensitive paper by yellow light; if the darkest parts of the image are faintly visible, the exposure is sufficient; if not so, proceed with the exposure till they can be seen; take down the paper and apply the developer; when sufficiently out, wash, fix, &c.

As there have been already several processes published for enlarging by development, I do not deem it necessary to enter into the detail of the chemical formulas.

But the greatest benefit I have derived this winter from the magnesium light is in the making of negative copies, from carte-de-visite to 14 by 17 inches. The following, from my memorandum-book, will explain the kind of results produced in this way:—"An enlarged positive on 14 by 17 porcelain, six-inch head, from thin card negative, wet collodion process, exposure forty-five seconds, weak iron developer quite acid—perfectly satisfactory result. Negative from one-ninth ferrotype, enlarged about five diameters, distance from front lens to ground glass thirty-six inches, exposure two minutes—negative every way satisfactory. Negative from one-sixth Daguerreotype, enlarged a little over two diameters, exposure forty-five seconds—resulting negative I could not possibly improve by sunlight. Negative from one-sixth Daguerreotype, enlarged to 14 by 17 plate (vignette head), exposure three minutes—a trifle under-exposed. A transparency from card negative, exposure forty seconds, full time: negative enlarged from this transparency on 11 by 14 plate, time of exposure three minutes—too much time; had to redevelop the high lights a little to get roundness. Have made quite a number of card size negative copies, the exposure averaging about thirty seconds, using a No. 1 Dallmeyer triplet, open lens."

For copying from card photographs, I prefer this light to sunlight, as it gives a much smoother copy. Not the least important part of using the light for copying is, the way in which the light is directed on the picture to be copied; and the mode I have found best I will endeavour to explain. Set up the picture to be copied before the camera, get the size and focus adjusted (if by night, a large kerosene lamp will do to get the size and focus by), then place in the camera the sensitive plate, and draw the slide; now take the lamp and box having the condenser in front, light the lamp, and direct the light on to the picture in such a way that a circle of light about two or two and a-half inches is on the picture; then, by giving a slight motion to the lamp, the light can be made to cover the surface of a card or other small picture. It is important, whenever the picture is small enough to admit of it, to use the circle of light formed *inside* the cone of rays from the condenser before it comes to a focus and diverges, for at that point the light is much more powerful than when used after passing the focus of the condenser. I have, on several occasions, finished printing collodio-chloride prints on porcelain after daylight had ceased to act. Wednesday before New Year I had four enlargements still to make and finish. I made the four within an hour, and with the last and most important one my wire gave out; luckily, the exposure had been just sufficient; the portrait was finished in time, for which I feel inspired to say: *Vive la magnesium!*

Chicago, Ill., U.S., January 6th, 1869.

[The examples of enlargements effected as described, forwarded by Mr. Carbutt, admirably bear out his remarks.—Ed.]

NEGLECTED ART STUDIES FOR PHOTOGRAPHERS.

BY W. W. KING.*

A few years ago I had the honour of reading a paper before you on the same subject as the present, and I then said that photographers had a tendency to run in grooves. I own that we have seen some improvement in this respect, and the tendency is not so general, although now there seems an attempt, with more or less success, to follow the style of M. Adam-Salomon's matchless works, difficult as indeed the attempt is, without his perfect artistic knowledge, though I gladly admit that Mr. H. P. Robinson, in his portrait of Mr. Hain Friswell, treads closely on M. Salomon's heels.

The camera, as we all know, is a splendid copyist; some would make it as the painters' brush, but this, from the nature of the instrument, it cannot be, and we deceive ourselves when we attempt to do too much with it.

Very great advance has been made in architectural photography by Mr. Bedford, Mr. Frank Good, and Mr. W. J. Collings. The success of the first is, as might be expected, due to his love of the subject and thorough reverence for the past, in addition to his architectural and archæological knowledge; and the others from following in the path he marked out. See the exquisite photograph of the west front of Lincoln Cathedral by him, and the very fine photographs of Canterbury, Durham, Salisbury, and other Cathedrals, which, by Mr. Collings's kindness, I am enabled to place before you. The importance of this branch cannot be over-rated, for details are valuable to the architect, and full of interest to those who study the life and manners of our forefathers. If you look at the details of Salisbury Chapter House, you will see how the sculptor gave life, and even humour to his work, combined with greater knowledge of Holy Writ than we are accustomed to believe. The truth is, the worker loved his work, and thus it became a success, and not a mere lifeless study. These remarks refer to our cathedrals, which have received a large share of attention; but, excepting Mr. Bedford, who never allows an interesting country church to escape his notice, what shall we say of the small country churches, so numerous that we appreciate the words of Dr. J. H. Newman, who says:—

> "Where'er I roam in this fair English land,
> The vision of a temple meets my eyes:
> Modest without, within all glorious rise
> Its love-enclustered columns, and expand
> Their slender arms?"

These buildings, in many instances, offer remarkable peculiarities of art and architecture, having, through their apparent insignificance, escaped the axe and hammer of the destroyer. Hallowed by the prayers of centuries, and imparting a feeling which no modern building can produce, they are, however, open to danger. Mistaken, but well-intentioned, zeal often is real destruction. I am not speaking of such acts as those of a Lincolnshire rector, who, in denuding his church of everything mediæval and Christian, boasted that he had purified the building, and made it truly Protestant, as if these acts of heartless irreverence could have had anything to do with religion of any sort or kind. Ancient art is to us a precious legacy, although some of its productions may not be quite in accordance with our modern ideas.

Some architects have photographs of the building before its destruction or alteration taken previously to their working on it. I need not say how much this is to be desired in every case, and how valuable the camera then becomes in producing an historical record. I fortunately visited the curious church of Darenth previous to its most careful restoration under the superintendence of a most accomplished architect and archæologist, Mr. W. Burges. Looking at the photographs you will see how good a record they are of the additions which disfigured the building in the last and preceding centuries, how it appeared when the internal fittings were removed, and now how it looks when restored somewhat to its ancient beauty. Mr. John Henry Parker, F.S.A., who has made so much use of the camera in his archæological investigations at Rome, strongly urges that photographs should be taken of every country church, and that the various archæological societies should make exchanges, so that comparisons might be made of the buildings in their respective counties. This suggestion is most valuable. We know that some of our churches, such as Bishopstone, Wiltshire, &c., exhibit traces of foreign work and design. Canterbury Cathedral will at once occur to your mind, showing the glorious work of William de Sens. How much one would desire to see photographs of Sens Cathedral, and compare them with those of our own metropolitan church! But, going from the greater to the lesser, we might, by some of the photographs aforesaid, trace the hand of the same mediæval architect in various counties. Mr. G. E. Street, R.A., considers, and not without good reason, that some of the exquisite work at Stone, near Dartford, is the production of the thirteenth century architect of Westminster Abbey. But, apart from these considerations, where do we find photographs of the curious seat in the chancel of Lenham, Kent, the stone screen at Westwell, and the beautiful chancel of Eastwell, recently judiciously restored by Lord Winchelsea, or the curious ritual arrangement at Horton Kirby, all in the county of Kent, and other peculiarities which I need not mention here? Such things as these photographers pass by, because, from their not studying the subject, they cannot appreciate its interest or its beauties. They might learn much by joining their county architectural societies as members, and pass a pleasant day in their annual excursions.

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* Read before the North London Photographic Association, Feb. 3rd.

I think I have now said enough on the architectural portion of my subject, and will pass on to another—

Botany.—When we have such gardens as Kew, whose officials treat with the greatest courtesy and attention every photographer who may visit the place—as I can, with much pleasure, testify—it is strange that our art has not done more to illustrate the treasures which those gardens exhibit. But then, again, what do most of our photographers know of botany? We must say, very little, otherwise they would have produced some subjects of a size sufficient for scientific use, and not contented themselves with stereoscopic sizes, beautiful, indeed, but utterly unsuited for the purposes of study. It is self-evident that a good photograph of a tree or plant conveys to the mind much more than a drawing, however carefully made or coloured, as the photograph of the *Areca Bauerii*, which I now place before you, taken for the purpose of showing the position of the flowers, they being at the base of the leaves; and that of the *Pandanus odoratissimus* (Screw Pine), showing the large roots produced from its branches.

I will now treat of another portion of this subject, viz., our ancestral trees. I have been told that the well-known Burnham beeches are yearly diminishing in number; we may be thankful that they have been so often photographed, But are there not in other parts of England trees remarkable, not only for their size, but also for their antiquity, or the scenes of history which they have witnessed, giving them an interest which they would not otherwise possess, disfigured, as their trunks may be, by the snobs who cut their names on the bark, and are thereby guilty of such barbarism that haply we might, in photographing, secure the autograph of some notorious evil-doer.

In passing, I may mention an idea which struck me as well worthy of imitation, though I cannot say it is original, for the same has been followed in John Evelyn's "Sylva," where the celebrated Cowthorpe oak is figured. Some photographer has sent to the Kew Museum a photograph of the Friar's Oak, at Clayton, Sussex; one taken with its luxuriant foliage, the other in winter, showing every branch, but both photographs of the same size, and exactly from the same point of view. The advantage of this idea in botanical study is obvious. We Englishmen are justly proud of our "patrician trees;" would that they individually received more notice from the photographer!

Next I may point out how much ferns offer as incentives to the photographer; their exquisite outlines are attractive to every one, and their somewhat sombre hue makes them particularly fit subjects for the camera, besides the strongly-marked individuality of each species.

Next, Geology.—I am enabled, by Mr. Bedford's kindness, which he invariably shows to our society, to exhibit the exquisite photograph of "Cliffs at Cheddar, Somerset," and one of "Rocks at Lynton;" we also know the good work of our late Vice-President, Mr. J. J. Cole. But much remains to be done with the camera there, for it does its duty well, and its results possess more than mere local interest.

One branch of this subject has been overlooked—viz., that of Palæontology. When we know that the lion, the tiger, the elephant, hippopotamus, and rhinosceros inhabited the land of Kent some ages ago—as shown by the brick earth pits at Crayford—we must see that the subject is one of great interest. I may, with respect to these, remark that the remains show distinct variations from those discovered in other counties. We may then ask, why is not some attention paid to this science by the photographer? The question of comparison again comes before us, and none can gainsay its importance. Mr. J. Davis Burton has given us some fine stereoscopic slides from some of the palæontological subjects in the British Museum; beautiful these indeed are, but, again, not large enough for the scientific man—not that I wish to throw any slight on stereoscopic slides, enjoying them as I do, and, I trust, duly appreciating their beauties.

As to photographs of animals we here have little record of progress. True, Mr. Faulkner has given us some most beautiful photographs of dogs, but what else has been done of late? We simply answer, nothing. Surely, in this respect, photographers should get out of the groove, for the field is inexhaustible and always attractive.

Then what are called "bits"! Again I summon Mr. Bedford before you to show what can be done. Look at the photograph of the "Deershed with Firs," and the bridge in a wood. Subjects such as these may be easily met with, but how seldom do we see them! They require the artistic eye, which every photographer does not possess, to find them out; but, when found, how refreshing they are for us to gaze on!

I must now treat of a portion of my paper nearly last, indeed, but not least—that of representing archæological subjects. We all know how the purchase of the Blacas collection was so ably achieved by Mr. Disraeli, to whom, on that occasion, all who were interested in art, whatever political opinons they might hold, gave due credit. When we see the superb head of Æsculapius we wish some record of the adoring look which even the Pagan Greek well knew how to express; and not only this, but others in that treasure storehouse, the British Museum, so ill-appreciated by the public, who need something to take them out of the everyday race for wealth, for, next to religion, art and science alone can afford relief to the constant strain on the minds of those who live at the present time, and if a thing of beauty is a joy for ever, surely a representation of that joy must be pleasing to the over-tasked mind and brain.

In conclusion, there really is a need for photographers to be better instructed in other matters than art, on which we have had most admirable papers in the photographic journals; but I do especially urge on all photographers that they require some knowledge of the subject they copy, otherwise its peculiarities or its beauties may soon escape them. I do not mean to imply that there is any royal road to learning, but I do say that some knowledge of botany may without very much difficulty be acquired by the photographer; some acquaintance of art by any man who has the least pretension to taste; some knowledge of mediæval architecture and archæology by any one who has any time to spare; and I say the same of geology. Any or all of these will add interest to the country ramble, and all are attractive to every one who reverences—and what right mind cannot reverence?—the past, knowing that from it he may guide his steps for the future. Labour to acquire this knowledge is necessary, but in all labour there is profit; yes, and we may add, *Labor ipse voluptas*.

ARTIFICIAL LIGHT AND PRINTING BY DEVELOPMENT.

BY JOHN BARNETT.*

In December last a friend forwarded to me a box of photographic sundries, amongst which there were some half-dozen porcelain dishes. The summer had been so hot, and my time so occupied, that I had given up photography, which became to me a thing of the past; but the sight of so many useful things raised an ardent desire to do something. The difficulty was how to employ them, when, to solve the difficulty, a periodical fell into my hands with this startling announcement, "Rapid Development Process used for Multiplying Maps in the Belgian War Office."

This decided me, and the necessary chemicals at once procured, I floated thin Saxe paper on a solution containing chloride of ammonium and citrate of soda, sensitized with a weak nitrate of silver bath; exposed ten to twenty minutes, using a weak negative and oxyhydrogen lime light; developed with acetate of lead and gallic acid; and although I tried this many times, I never obtained even the trace of a picture.

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* Read at a meeting of the North London Photographic Association, February 3, 1869.

In using the lime light, I used common coal gas through the open end of a quarter-inch tube, and the oxygen plays through the flame in the manner of a blowpipe. I never mix the gases now, having had one explosion, which was more than sufficient to satisfy me that fearful danger lurked in the practice.

Seeing that no good was likely to accrue from this first process, I wandered to another—whose author was Dr. Liesegang—which, for distinction, I would name the "tapioca process," that substance being used with chloride and iodide of potassium and lemon juice for the iodizing a tolerably strong nitrate bath, and a gallic acid developer; and although it was described as a highly-sensitive process for enlargements, I must confess in my hands it was very slow. I certainly obtained a picture; but it was covered with little red patches, which, from subsequent experiments, I think were due more to the paper used than to the process.

I now wandered back to the old processes—simple salting, Talbot, and Taupenot—but in all these very long exposure was necessary to obtain any result, and the numerous washings, and floatings, and dryings, took up too much time, and I began to think of giving up, when it occurred to me—Why not endeavour to prepare a paper as much like a collodion plate as possible? The idea appeared so feasible that I at once floated thin Saxe paper on iodide of potassium, and, without any washing, sensitized it when dry on a 35-grain nitrate bath. With a ten minutes' exposure I obtained my first picture, the worst feature in which is, that it is *in* the paper, not *on* it. I now added albumen in the proportion of one to ten of water, and at last of one to four, which, with the addition of bromide of ammonium, has given me the best results I have to show you.

The formulæ stand thus:—

Iodide of potassium	12 grains
Bromide of ammonium	5 „
Albumen	2 drachms
Water	1 ounce
Bath.	
Nitrate of silver	35 grains
Water	1 ounce
Acidulated with glacial acetic acid.	
Developer.	
Gallic acid (saturated solution) ...	1 ounce
Water	1 „
Glacial acetic acid	20 drops

For a short time this process worked very cleanly and well, but lately I have not been able to obtain other than dirty brown or red brown pictures. The addition of silver to sixty grains per ounce does not seem to have any effect, and I am quite at a loss to account for the failures. I have tried developing with pyrogallic acid; this brings out the picture at once—in fact, so quickly that there is scarcely time to float it before it must be immersed in plain water to stop its action. The prints are very gritty in the shadows, and the high lights become discoloured; besides which, when using pyro., the prints cannot be immersed, which I think a great drawback, as one cannot see how the picture is progressing. I hope to have your opinions on this subject.

From the short experience I have had I find it very unwise to use other than photographic paper for photographic purposes. I was induced to try a very hard post paper, made by Towgoods, of St. Neat's Mill, and the result, both with the tapioca process and that with which I have been most successful, is very remarkable. The paper becomes of a dark red, or, rather, dirty red. This did not arise in merely one instance, but in all that I tried, both by artificial light and daylight.

In examining the results of my labours I trust you will not be too severe in your criticisms. Remember that I am only an amateur, and that I bring the prints before you with all their faults, hoping to profit by the hints which I know so many present are able to give me.

Before closing this short paper, I wish to call your attention to the subject of artificial illumination. So much has lately been printed on the subject that I scarcely like to attempt to lead you into a discussion on the subject, but any new method of obtaining an actinic light cannot but be a source of interest to us all.

I would call your attention to some small prints on the table, which are very unsightly, very imperfect, it is true, but which were produced by simply burning some zinc shavings in a small jet of common gas. I must acknowledge that I was truly surprised at the powerfully actinic light produced by this means. The excess of exposure is one minute—some half a minute—the paper being the same as the enlargements, used dry, under the same negatives. The zinc used is that generally known as "rolled sheet," one-eighth of an inch thick, the shavings being turned off in a lathe. The same unpleasant dry fumes arise during combustion as from magnesium. I shall be glad to know something of their nature, and if detrimental to life or health. I believe Solomon's lamp confines them to the chimney, or some other dark abode where they do not trouble us, so I presume that difficulty could be overcome with zinc. Its price would place it in the hands of all, being infinitesimal in cost compared with magnesium.

These are matters I must leave to those who are better able to discuss them than I am, and from whose remarks I feel confident good results must necessarily follow.

PHOTOGRAPHY AND THE MAGIC LANTERN APPLIED TO TEACHING HISTORY.

BY SAMUEL HIGHLEY, ESQ., F.G.S., ETC.*

Oxygen Generating Apparatus.—As the lime-light lantern has come into extensive use among amateurs since photography has been employed in the production of slides—many gentlemen taking records of their tours with pocket cameras, and, from the negatives obtained, have transparent positives printed, and then show their friends these reminiscences of travel on a larger scale—it is judicious that the philosophical instrument maker should render the apparatus easy of manipulation, and make every possible provision against accident. To this end I have re-arranged the oxygen-generating apparatus in such a manner as to provide against various contingencies:—First, I enclose my retort with a light iron jacket furnace, so that I not only prevent a great amount of heat being dissipated, but secure the upper surface of the mixture of chlorate of potash and oxide of manganese being melted as well as the lower portion directly over the charcoal or gas-burner, as I found that there was a great tendency for the light powdered manganese to separate and float upon the surface of the melted chlorate of potash, and when the oxygen bubbled briskly through the upper and cooler stratum, it carried this damp powder forward, and often choked the delivery tubes; I further got over this source of a blow-off by using coarse-grained oxide of manganese, instead of the powdered, which answered equally well, as the action of the manganese is mechanical, not chemical, for sand, a non-oxygen yielding body, will answer in its place. In case, however, of the tubes becoming accidentally choked, I provide the retort with a metal safety valve, through which the oxygen finds vent. The second source of accident arose if the operator did not disconnect his retort from the wash-bottle as soon as all the oxygen was given off from the mixture, for nature, abhorring a vacuum, sucked in the water from the wash-bottle upon the red hot mixture, and converting it into steam, a blow-up terminated the operation. This arose from the delivery-pipe passing directly into the water, so I dispensed with this kind of action by dividing my wash-bottle into two chambers, and arranging my tubes so that the one in connection with the retort did not come in direct communication with the washing water. A shield at the exit pipe prevented the spray being blown into and wetting the gas bag. Again, the oxygen sometimes came off with a rush, instead of in a quiet orderly fashion, and would blow off the rubber tubes, if it did no worse. This is provided for by arranging the jacket, so that it and its contained retort can be removed from the charcoal pan, or, if gas is used, by simply governing too violent or torpid action by the tap provided.

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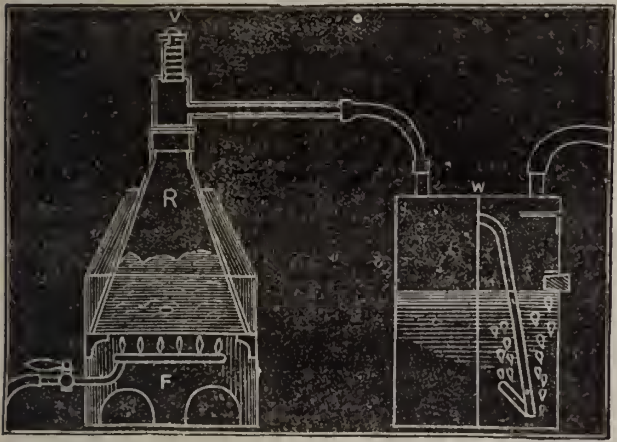
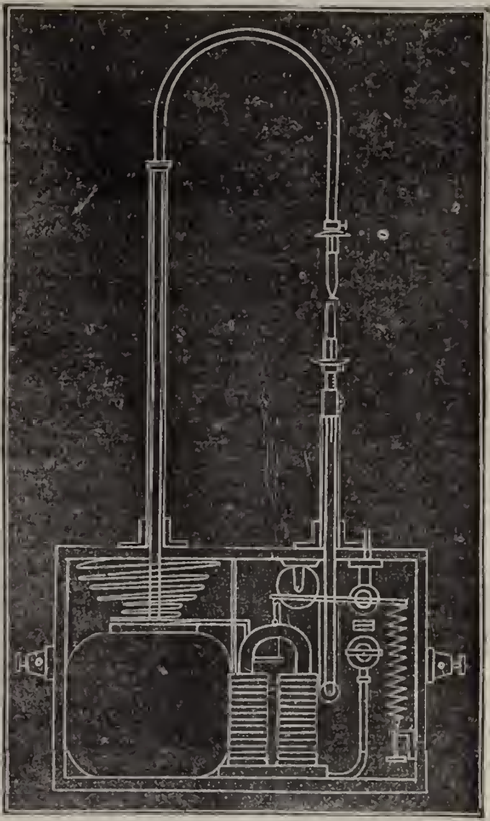
* Continued from p. 69.



Electric Light.—This, from the trouble attending the fitting up and charging a number of battery cells, which give off nitrous acid fumes, is seldom employed, excepting at institutions where an attendant is accustomed to the drudgery of this unpleasant operation; and even when Wilde's machine comes into more general use, from its cumbrous appliances this source of light can only be employed in fixed localities; nevertheless, it is *the* light of all others for optical experiments, and for the lantern microscope. The ordinary electric regulator provides for bringing a pair of carbon points in contact, and then separating them to a distance proportionate to the electric power employed, so as to produce what is called "the electric arc;" that is, an electric flame carrying incandescent and vaporized carbon from one pole to the other, and whenever the striking distance between the two poles becomes too great, it automatically brings them nearer, or "makes up," as we say; or if the distance has been overstepped by the breaking off of a piece of the carbon poles, &c., then it brings them in contact again, and repeats the operation so as to produce and keep up a constant point of light. On the precision of this action depends the value of the regulator. Usually fifty battery cells, arranged for "intensity," are employed; seldom less than twenty cells. Of late we have heard that "an electric regulator," worked with six cells, produces a beam that will supersede the lime light. Now, as a regulator in no way adds to the battery power, to those who have not been accustomed to get a quart of wine out of a pint bottle this is rather a startling announcement, especially when we are told that a nine feet disc can be brilliantly illuminated by this small number of cells. The power being so small, a pair of very fine-pointed carbon poles are kept touching each other, so that we may call this "the contact system," in contradistinction to the arc-producing method previously described. I will show you the contact light from seven cells, and then the light emitted from fifty cells, by means of a new form of regulator, on the usual system, which I have not hitherto publicly exhibited or described. This is an invention of Mr. Malden, one of our most expert public lantern exhibitors, though professionally a wood engraver, and is not only the most sympathetic, self-adjusting regulator, giving a steady point of light, central with any optical arrangement, for as long a time as the source of electric power remains constant, but is the simplest in construction and the cheapest I am acquainted with. In this arrangement the rod that carries the upper carbon is weighted, and rests upon an air-ball placed in a cylindrical chamber; an exit pipe from the ball is closed by a stopcock, which can be opened or shut by the action of an electro-magnet placed in the circuit on a lever arm fixed to the stopcock, a counterpoise spring being attached to the other end of the lever arm to adjust the action according to the amount of battery power employed. On the air-ball being filled by a little bellows, the two poles of the regulator are separated, and a connection being made, the poles fall together, as the stopcock is open till such time as they touch, when a circuit being established, the armature of the electro-magnet is pulled down and then closes the stopcock, but the poles at once separate to the striking distance of the battery power employed, and, as they burn away, the stopcock is slightly opened, so that a small quantity of air escapes, and thus allows the upper carbon gradually to descend, while by a pulley arrangement the lower carbon is simultaneously raised in the required ratio of the combustion of the upper to the lower carbon—viz., two to one—thus securing centrality with the optical apparatus employed. Should a portion of carbon break off, the striking distance being over-stepped, the current is broken and the stopcock is again opened, when the poles are rapidly brought into contact, again to start apart in automatic adjustment. This arrangement is well suited for lighthouse purposes, as, from its extreme simplicity of construction, it could be readily kept in working order or repair by a man of ordinary intelligence, and this cannot be said of the beautiful but complicated regulators usually employed.



(To be continued.)

Correspondence.

DRY PLATES: LIVERPOOL, GUM, AND TANNIN.

Sir,—In June last I promised the News an account of my experience with the Liverpool Dry-Plate Company's prepared plates, and if the narratives of others shall not have deprived it of novelty or value, I beg to offer it even at this late hour for the information of dry-plate amateurs.

I ordered early in the spring two dozen 8 by 10 plates, to which the manager kindly added a few with backs unpainted. I have tried them at intervals from June until the end of November, the last four having been kept several days in a damp place, and then dried before a hot fire the day before exposing. The general results were extremely satisfactory: the plate in its keeping qualities, its evenness of development, equality of sensibility, and rapidity of development, equals any dry plate I have ever tried, and particular plates that were fortunate in preparation possessed all the qualities one can desire in a dry plate, except *absolute* evenness of development in the sky, in which everything yields to collodio-albumen, and my experience with them, on the whole, convinces me that we must work in that direction for the ideal dry plate.

The development advised by the direction accompanying the plates is the best I have used, and the only danger I found in it was of getting too great density, nitrate of silver in development having never been required, and several negatives were, in the beginning, spoiled from the density being more than, judging from previous experience, I thought it to be. The plates with unpainted backs all blurred. In sensitiveness they are as three to four compared with gum plates, the quickest of my own preparation, and they maintain their sensitiveness completely, exposures in October requiring only one-half more time than those in July, *the loss of actinic power in the autumn light being much less than with other plates in which iodide was used.* The plates that were exposed to damp were spoiled, patches of insensibility appearing in them.

There is no danger of fog, except from over-exposure, and this, if moderate, may easily be retrieved by the use of bromide solution in the developer. Endeavouring, on one of my first trials, to get two views which should unite and form a panoramic view, I forgot to close the lens for the first until the plate had had an exposure of eight minutes with No. 3 opening of Dallmeyer's wide-angle landscape lens, and I accordingly gave the second the same. The first clouded all over the instant I applied the developer as per order; but by doubling the bromide and halving the ammonia in the second I got a perfectly clear negative. It is, however, necessary to develop in a completely non-actinic light.

I kept some plates weeks in the slides without perceiving any ill effect—and, indeed, I unpacked the whole lot on receiving them, and used no plate-boxes but ordinary deal ones to keep them from change. These experiments were all made in Greece or the Archipelago, with a semi-tropical climate, and left on my mind the conclusion that, for amateurs, tourists, and for reserves in the stock of photographers abroad, to meet emergencies of several conceivable kinds, nothing has come under my notice so valuable in its way as the plates of the Liverpool Company; and that few photographers other than professed dry-plate workers can prepare their own plates to any advantage so long as they can get these.

But there are disadvantages which more care and improvements in the process ought to remove. I have not found a single plate free from pinholes, very small and evenly distributed in the best samples, and, I judge, from particles suspended in the collodion, which dissolve out in the development. In some cases these go in bands, as if the particles had come in the bottom of the collodion bottle and followed the direction of the flow of the collodion, and sometimes gathered in great numbers at the lower edge of the plate where the collodion was poured off. This, I judge, might be obviated by a careful and systematic decanting of the collodion, and never pouring too near the bottom. That the particles which caused the pinholes were in the film I am certain, as I took every precaution to get rid of them, and exposed and developed, in connection with the bromide plates, my own plates of several kinds without pinholes.

The most serious fault I have found in the plates, however, comes from carelessness in the packing, and might easily be avoided: it is in putting up plates with the convex sides (the glass being flatted crown, slightly uneven) together, so that the centres of the plates were in contact; and the films in those parts were utterly insensitive, having transparent spots of considerable dimensions in the centre of the negative. Of the two dozen plates ordered and received, ten were spoiled for negatives in this way, or, at least, requiring very difficult stopping out. This is an unpardonable carelessness in the management, and alone would prevent me from ordering any more of these plates, though to those who reside near, and can make sure of the selection of the plates, it would not be an objection. The glass used in the lot sent me was also of a very inferior quality, some sheets cockling both ways, so that it was impossible to pack them together without touching somewhere.

These are, however, faults which have nothing to do with the system, and the results attained in some of the plates convince me that all the dry-plate experimentalists would do well to turn their batteries on this method and its analogous ones until all the defects are obviated, and we get a really reliable dry plate.

Theoretically, there is one great difficulty to overcome to give the bromide film the same delicacy of constitution as that prepared by the nitrate bath; this is, that the latter being sensitized by a salt formed in an immovable (structurally considered) film by two substances in solution coming into contact, and chemical union by slow filtration, the resulting compound (the sensitive salt) will be more equally and minutely distributed than can be the case where they are mixed in a fluid, and the particles of the bromide are allowed to segregate and agglomerate, as they will in a greater or less degree, or precipitate, which is still worse. The sensitive salt should be held in perfect suspension, which it can only be by dissolving it in some substance which will mix with the collodion, and evaporate after it has set, and leave the salt perfectly distributed. This would suppose the introduction of a new agent, and one of whose existence I am ignorant; some experimental chemist may find it, however, until when we must be content to form the salt in the collodion by chemical combination more or less in the old way. There is, however, an immense difference in the tendency to segregate or precipitate in any chemical compound formed like bromide of silver in the collodion when the solutions of the constituents are feeble than when they are strong; and if, then, we could dissolve the nitrate of silver in one half the fluid, and the bromide in the other, it would produce a much finer and less precipitable form of bromide than if the silver or bromide were added in concentrated solution to the collodion. I intend making careful experiments in this direction in comparison with the method indicated by Mr. Carey Lea, and perhaps some of your readers may think it worth while to try the same in anticipation of my results. I have so little time at my disposal for such purposes that it may be long before I do all I intend in the way of experiment, and my command of materials is so limited in this part of the world that I may not be able to obtain what would best answer the purpose. In any case, you will be informed if I arrive at valuable conclusions.

In the first experiments I made with the gum process of Mr. Gordon I had great difficulty with partial lifting of the film, sometimes in the form of blisters, and at other times in large portions of the film leaving intermediate points adherent; and the developer penetrating and acting on both sides of the film where raised caused stains, which made the process worthless to me. I subsequently found that this was the fault of the collodion, made for albumen processes, and strongly adherent. On employing a new collodion (Rouch's extra-bromized was the kind I got) I found that the film was readily loosened, and that the developer acted with great regularity; from which I conceive that the best collodion for gum plates should have a tough film, and that age and decomposition, so valuable in albumen plates, are faults in gum plates.

Another discovery I have made in tannin may be of interest to some of your readers. I was, three or more years ago, much in the habit of using tannin plates, and prepared a 60-ounce bottle of 32 grains solution of tannin by clearing it with white of egg, and filtering until it became as clear as sherry wine. It always, however, gave me the small transparent spots which are so serious a drawback to tannin preservative. Having left the bottle quiet for two years I one day decanted a small bottle of it, and found that my films were perfectly free from the spots alluded to, and have been in all the experiments I have since made with it. Seeing in the News a question with reference to a similar phenomenon in morphine plates, it occurred to me that the reason might be the same in both cases; *i.e.*, some form of resin held in solution while the solution was dilute, and segregating as the water evaporates from it. In this case the two years' repose of my tannin solution gave time for this to get to the bottom.

And while on odds and ends, allow me to suggest a collodion filter I have found very effective and convenient: a long tube of caoutchouc—say three feet, or more, even—one end of which is put through the cork of the collodion bottle to be filtered from, and the other to the bottle it should be filtered into; the former standing on a shelf or table as much as possible above the latter. In the lower end a plug of cotton is inserted, more or less loosely as the need may be, and by blowing into the upper bottle through a small glass tube passed through the cork the collodion will filter undisturbed and unevaporated into the lower bottle. The elastic tube, of course, should fit snugly and prevent evaporation, and the hole for the glass tube should be plugged.—I remain yours truly, W. J. Stillman.

Athens, Greece, January 20th, 1869.

LIVERPOOL DRY PLATES IN THE TYROL.

Sir,—Proposing last autumn to join a party in a tour through the Tyrol and Italy, and knowing that I should not have the time necessary for working the wet process, I determined to try what I could do with the dry. I had already tried the tannin and Mr. Mudd's collodio-albumen process without obtaining results which I considered satisfactory, and last winter I had used Mr. England's process with some success; but I thought I had found that the plates prepared according to his formula, though they would keep for some time after exposure, were liable to fog if they were not developed within a day or two afterwards, and when I mentioned that to a friend who uses the Liverpool dry plates, he told me that he had found his develop just as well five weeks after exposure as if they had been perfectly fresh. As this quality of keeping after exposure was indispensable, I determined to try the Liverpool plates, and I was so far successful that I ventured to take this kind only on my tour.

I obtained from Mr. Meagher two of Hill Norris's dry-plate boxes with double grooves, so as to place the plates back to back. This is a point of great importance in travelling, not only on account of the economy of space, but also the security of the negatives from breakage. I have had numbers of glasses broken when packed singly in plate-boxes, but never one, I think, when there were two in the same groove.

I requested Mr. Mawdsley, the manager of the Liverpool Company, to send me freshly-prepared plates, and he did so, though he said he considered their freshness a matter of indifference. I took a tripod with sliding legs, which was made two years ago in Geneva, and which I find invaluable on rough, stony, or sloping ground, as I never have any difficulty in placing my camera level; and, which is almost as important, I can place the camera at any height from the ground, from about 1½ feet to 5½ feet. The top of the tripod is a round piece of wood 4 inches in diameter, upon which the camera is screwed in the usual manner, with this difference: the principal screw fastens the camera to the tripod, but does not prevent it from turning; on the contrary, it turns with it, and is not, therefore, liable to work loose from the camera. A female screw works upon the thread of the other, carrying with it a spring which presses against the loose side of the top of the tripod, and fixes the camera quite firmly. A light brass ring on the bottom of the camera fits round the top of the tripod, and serves as a guide to place the screw-hole of the camera just over the screw of the tripod in putting it together. Among the many advantages of this form of tripod is its remarkable steadiness, for all the legs may be fixed in their proper position by screws, so as to make the tripod almost as firm as a three-legged stool. After two years' experience I may say that I should feel quite lost without it.

We left England in the middle of August, passing through Geneva, Constance, the Vorailberg. Finstermuntz, over the Stelvio, through the Italian Tyrol to Trent, over the Brenner to Innsbruck, Saltzburg, Berchtesgaden, back to Bruneck, through the Dolomites to Venice, Bologna, Rome, Florence, Spezzia, Genoa, Turin, Geneva. I mention these particulars to enable your readers to judge of the amount of shaking and the change of temperature to which the plates were exposed. At Rome the heat was very great.

I did not develop any plates till we returned to Geneva, so that I had no means of testing the exposure. For the stereos it was generally about right, and I send you prints of five of them, by book-post, to give you the means of judging of their quality:—

Numbr.	Date of Exposure.	Date of Development.	Interval.	Stop of Lens.	Exposure.
1	Aug. 28	Oct. 14	47 days	3	1 minute
2	,, 30	,, 15	46 ,,	open	1 ,,
3	Sept. 7	,, 24	47 ,,	2	1 ,,
4	,, 12	——	——	2	1 ,,
5	,, 12	——	——	3	2 minutes

A pair of Dallmeyer's quick-acting stereoscopic landscape lenses, of six-inch focal length, were used. I did not note the date of development of Nos. 4 and 5, but the interval between exposure and development could not be much shorter than in the other cases. Two other negatives were kept fifty-three days, and in no instance did I find any tendency to fog, unless from over-exposure. In that case, the line which separates the two pictures, being shaded from the light by the partition, came out as bright as bare glass when the negative was fixed.

The 8½ by 6½ plates were in almost every instance considerably over-exposed, but, by using a very large proportion of carbonate of ammonia in the development in the first instance, I brought up the intensity as quickly as the details came out, and I secured very respectable negatives.

I should be glad to have your opinion of the five prints I have sent; No. 3 is rather under-exposed, for the sake of the distance, but with that exception they seem to me to have as much softness and atmosphere as one generally obtains with the wet process. I do not know whether any other dry process would give equally good results under the same circumstances; if so, I should be very glad to know it, that I might prepare my own plates.

Having said this much in favour of the Liverpool dry plates, I am bound to add that I do not think that they are prepared with anything like the care that ought to be bestowed upon them; for instance, the stereoscopic negatives, though by no means free from pinholes, have very much fewer than the large plates, though I treated all exactly alike; all the latter requiring the sky to be painted out. This seems to show that some batches of plates are prepared with more care than others. Many of the larger glasses, too, had stains which were visible before development; fortunately, they do not always show in the print. The glass used appears to be very common sheet, and is not free from large air-bubbles, nor is it always flat; in short, I imagine that few photographers would purchase so common a quality for their own use.

Many amateur—and, perhaps, many professional—photographers would be glad of the opportunity of purchasing plates ready prepared if they could have perfect confidence in the quality, but I am sorry to say that such is not the case at present, and, as far as I can judge, the defects do not necessarily belong to the process, but to other causes, which it is to be hoped will not continue to exist now that these plates are in such excellent demand.—Your obedient servant,

Amateur.

Hotel des Bergues, Geneva, January 25th, 1869.

VALUE OF RESIDUES.

Dear Sir,—On reading "H. B.'s" letter in your last number, I could not help thinking that he had been smelted as well as his residues. It may be of interest to him and other of your readers if I give a few particulars from my own experience of what the various residues are worth.

Sensitized paper-cuttings, the paper of medium thickness, and the bath of moderate strength—from 40 to 50 grains to the ounce—are worth from 4s. to 5s. per pound. The photographer should, however, burn them himself, and save most of the cost of reduction. It is an easy job, owing to the nitrates which they contain (saltpetre, &c.). The white ashes are worth 50s. to 60s. per pound. Filters and such like things will not much alter this value.

The chloride should be worth from 3s. to 3s. 6d. per ounce. With the most ordinary care there need be very little impurity in it.

With the sulphide, however, it is different. It is usually precipitated with liver of sulphur, and contains a great excess of sulphur. Its value may be very roughly estimated at 2s. 6d. per ounce, including both gold and silver. In the epoch of old hypo toning and fixing baths the value of the gold was often more than 25 per cent. of that of the silver. It is now less, being, in my case, about 15 per cent.; but, of course, this must vary greatly according to the care taken and the particular toning formula used.

Now let us suppose that "H. B.'s" residues were only moderately pure. They should have produced as follows:—

	£	s.	d.
7 pounds paper-cuttings at 4s.	1	8	0
2 pounds 4 ounces sulphide at 2s 6d. ...	4	10	0
12 ounces chloride at 3s....	1	16	0
	7	14	0

Twenty shillings is a fair allowance for the cost of reducing this quantity, so that "H. B." should have received nearly double what he did. The silver at 5s. 3d. is quoted at a very low price, and no gold is mentioned, either by your correspondent or his friend the smelter.

The plan you propose, of dividing the residues into two parcels, and sending them to two different houses, is a good one when there is a quantity, but is hardly to be recommended for small lots, such as the majority of country photographers probably collect, as a higher percentage is charged for the reduction when the amount is small.

The cuttings of finished pictures are not worthless: 4¾ pounds of the ashes of these produce—gold, £1 4s. 6d.; silver, 19s.; the cost of reduction being about 4s. This greater value of the gold is, I find, an invariable rule. I do not know how much paper this represents, probably rather more than a sack full, a quantity which is soon collected where much mounting is done.—Yours, truly,

Norbiton, 6th February, 1869. Russell Sedgfield.

Proceedings of Societies.

North London Photographic Association.

The usual monthly meeting was held in Myddleton Hall, on the evening of Wednesday, February 3rd, Mr. Goslett in the chair.

The minutes of a preceding meeting were read and confirmed.

Mr. W. W. King then read a paper on Neglected Art Studies for Photographers (see p. 76), in the course of which he exhibited, as illustrations of his subject, several fine photographs of architectural subjects by Mr. Bedford, W. T. Collings, and others; and some fine botanical examples by himself.

A general and desultory conversation on the subject, and on the specimens, ensued, in the course of which it was remarked that the negatives of some of the views of crypts exhibited had required an exposure of three and a half hours by the wet process; and allusion was made to the views in Westminster Abbey, by Mr. Victor Prout, taken some years ago, in which the plates were removed from the camera and redipped in the nitrate bath during the period of exposure, care being taken, by a system of registration, that the plate should occupy exactly the same position in the dark slide and camera all the time. After a vote of thanks to Mr. King,

Mr. Barnett (Honorary Secretary) read a paper on Photography by Artificial Light (see p. 77) in the course of which he exhibited several developed prints produced by the light of zinc burnt in an ordinary gas flame. He asked if any member could state the effect of the fumes evolved during its combustion.

Mr. Hart said that as zinc generally contained arsenic, arsenious fumes would be given off. It could, of course, be purified, but that would increase its price from 4d. to 2s. 6d. per pound.

In answer to a question, Mr. Hart replied that no method of getting rid of the fumes of burning magnesium was in use, except a flue to conduct them into the open air.

After some further desultory conversation on artificial light and printing by development, a vote of thanks to Mr. Barnett closed the discussion of this subject.

The officers for election at the annual meeting in March were then put in nomination.

The Chairman announced that it was in contemplation to hold a soirée in April, particulars of which would be duly announced.

The proceedings then terminated.

Photographic Society of London.

The annual meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, February 9th, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a preceding meeting were read and confirmed, and Mr. Goodman was duly elected a member of the Society.

The Treasurer's report was then read, and showed a balance of £15 18s. 6d. in favour of the Society.

The Chairman then read the Report of the Council, the adoption of which was duly moved and carried.

The Chairman, in referring to the retirement of Sir F. Pollock, Bart., from the Presidency of the Society, said that it was his great age alone—being in his 86th year—which induced him to retire, as his heart was with them still. He moved a special vote of thanks to him, which was carried by acclamation.

The Chairman also moved a vote of thanks to Dr. Diamond, on his retirement from the Secretaryship of the Society. This was carried by acclamation.

A vote of thanks was also carried by acclamation to Mr. Robinson for his admirable picture, "Watching the Lark," presented to the members of the Society; and a vote of thanks to Mr. H. Claudet, for the presentation portrait of his late father, which was announced as ready for distribution at the next meeting.

The Chairman then read the complete list of officers of the Society for the ensuing year, as follows:—

President: J. Glaisher, F.R.S., F.R.A.S.

Vice-Presidents: the Rev. J. B. Reade, M.A., F.R.S.; the Earl of Caithness; and H. W. Diamond, M.D., F.S.A.

Honorary Treasurer: H. White.

Council: J. Anthony, M.D.; V. Blanchard; H. Claudet; J. H. Dallmeyer, F.R.A.S.; T. Sebastian Davis; J. Durham, A.R.A., F.S.A.; W. England; Arthur Farre, M.D., F.R.S.; R. Manners Gordon; Jabez Hughes; R. J. Mann, M.D.; J. E. Mayall; W. Mayland; H. P. Robinson; G. Wharton Simpson, M.A.; J. Spode; M. Whiting, Jun.; Prof. Sir C. Wheatstone, F.R.S.

Honorary Secretary: J. Spiller, F.C.S.

The **Chairman** wished to say a few words the first time he appeared before the members as President. He was not a stranger amongst them. They knew him, and they knew him to be a reformer; and, as such, it was his resolve to deal straightforwardly with the Society. He would say at the outset that the balance-sheet was not satisfactory. The apparent balance in favour of the Society would probably be against them if some of the assets were valued at what they would realize; and it was better to look facts in the face. But when he looked at the Society, and found, as he did, upwards of 200 earnest men in it; when he looked at the present temper of the Council, and their resolve to grapple with difficulties, he saw nothing in the affairs of the Society which could not be cleared off and set straight. It required earnest men, and he believed and trusted those in charge of the Society's affairs would be earnest. They had work to do, and he had reason to believe that it would be done, and that they should yet place the Society in a good position. In some respects the Society could not be in the position it once was. It was fashionable at one time to belong to the Photographic Society, but that had ceased; it was no longer so; the Society had another position, but it might still be a sound one. They saw they had liabilities; but they could clear them off if members would co-operate with the Council, and in one essential way they could do it, and that was by paying up arrears of subscriptions. They had now a change in their journal, and he hoped in future it would be a journal quoted from, instead of only quoting; a journal which, without unfriendly rivalry, should be equal to any other, and which, when it did quote another journal, should be regarded as complementing that journal, and probably giving value to the extract by some words of original comment upon it. He hoped to have the co-operation of other journals in promoting the interests of the Society, and to work in harmony with all, without bad feeling of any kind. He, as President, would have none. He hoped they would be able to make their journal one worth opening, with a confidence of finding something valuable to read. They would thus, and in other ways, he hoped, give their country members a *quid pro quo* for their subscriptions. He should be glad if any of the members would assist them in giving presentation prints. At present the Council would not be able to sanction much expenditure for such a purpose, but he hoped the time would come when they could do more. He hoped the time would come when the Society could do more for science than it was doing now. He had looked over the 200 names, and knew many of them to be earnest men, and he knew that in the Council they had good men. But they were in debt, and he did not like it. It was an unfavourable state of things, either for societies or individuals. It was to get rid of this state of things that he urged the prompt payment of subscriptions, and he asked members to work with the Council in efforts to bring about a prosperous condition, and the time would come when, with a balance on the right side, they could work efficiently in aiding the science. Who could feel the value of photography more than himself? But for photography he and his assistants would frequently be workers and watchers all night long. The records of the registration of their instruments required taking once in every two hours, and little rest was obtained under such circumstances. They had to record the variations in movements so delicate that the finest spider's web was sufficient to arrest the motion. It could only be registered by an imponderable, and that imponderable was light, and the process of photography. He could speak with much feeling and appreciation of what photography had done for science, and for his own labours. They knew, too, that photography had a great future, and he hoped each one would resolve to take his share in it. The Council had looked their affairs in the face, and felt satisfied they could overcome all the difficulties. But members must help them by interest in the Society, by prompt payment of subscriptions, and by inducing others to join the Society. (Applause).

Mr. L. **Bing** then read a paper on a New Actinometer, an example of which he exhibited, and showed its mode of working.

The **Chairman**, in inviting discussion, said that anything which facilitated an actual measurement of the varied actinic intensity of the light at different periods must be of value to photographers. He had often been surprized to observe the practical accuracy of judgment as to the condition of light which he observed amongst professional photographers; but this was in the studios with which they were familiar: remove them to another studio, and, until experience was gained, their judgment would be all at fault. An instrument like this would give sufficiently accurate indication for practical purposes, quite independent of the judgment or experience of the operator. It was always gratifying to him to see simple and skilful mechanical arrangement for any given end, such as this seemed to be.

Mr. T. **Sebastian Davis** remarked that the subject of actinometry was of so much importance, both in a scientific and photographic point of view, that we could but welcome the introduction of any instrument calculated to facilitate its study. The ingenious instrument introduced to the attention of the meeting acted rather on the principle of indicating the relative than the absolute amount of actinic power. But the point to which he would direct attention in immediate connection therewith was the application of the principle of the decrease of the intensity of light in an inverse ratio to the distance from its source. This principle was applicable to sound, heat, electricity, and other forces radiating from a central point. It depends on the mathematical fact that the areas of rings or cubical contents of spheres are to each other as the squares of their diameters or radii, and therefore the forces of sound, heat, actinism, &c., are attenuated in the same proportion. The same ratio is found to exist in the intensity of diffused light entering a cylinder from its open end. This appeared to him, as far as photographic action is concerned, to be applicable to a sensitive surface placed at right angles to the sides of the cylinder, and that if these were placed in such positions, the intensity of the light would act in the inverse ratio of the square of their distances from the outer edge. The same rule would not, he thought, exactly correspond to the amount of light falling on surfaces parallel with the sides, as in the instrument exhibited. In conclusion, he wished to impress upon those interested in actinometry, the great desirability of devising a unit standard of actinic intensity. If such a standard were designed and adopted, most valuable assistance would be rendered to every section of scientific and practical photography.

Mr. **Hart** asked if Mr. Bing had any arrangement for a uniform hygrometric condition of the sensitive paper, as that would materially modify its sensitiveness at various times.

A conversation followed on the importance of a paper of standard sensibility and uniformly hygrometric condition.

Mr. P. **Le Neve Foster** said he believed that Mr. Bing said at the British Association that the theoretical conditions which he had laid down had been verified in practice.

The **Chairman** explained the mode of preserving a cylinder of paper in a uniformly moist condition for twenty-four hours, which they adopted in the magnetic registration at Greenwich. A glass cylinder or cover was placed over the roll of paper; this, of course, permitted the light to pass, but prevented evaporation, and kept the paper sufficiently uniformly moist.

Mr Bing said the method in question would doubtless be of great value, especially if the actinometer were required for scientific observation; in which case the instrument would be slightly modified in some points of manufacture. That he exhibited was for practical purposes, and, as Mr. Foster had observed, the theoretical statements, with the qualifications he had mentioned in his paper, had all been verified by actual results.

After a few further observations, and a vote of thanks, the subject dropped.

A demonstration of photo-relief printing by Mr. Woodbury was announced for the March meeting.

Some prospectuses of the projected photographic exhibition in Paris were distributed.

The proceedings then terminated.

Talk in the Studio.

Mr. F. W. Hart, F.C.S.—It will interest our readers who are familiar with many valuable contributions to photography, both in suggestion and in ingenious manufactures aiding chemical manipulations, made by Mr F. W. Hart, to learn that at a recent meeting he was duly elected a Fellow of the Chemical Society.

American Photographic Exhibition.—A photographic exhibition is announced, by the National Photographic Association, to be held in Boston in June next. Further particulars will be duly announced.

Negative Varnishes.—We have had two new negative varnishes submitted for our trial and opinion recently. Unfortunately, an adequate opinion of a varnish can only be given after lengthened trial, and the weather recently has not been of the character to permit testing an important point, namely, whether the varnished film becomes tacky on exposure to a hot sun. So far as circumstances permit, however, we have tested each varnish. The first is that of Schmerl and Ellis, for cold application. It is applied to the cold plate, and requires no application of heat whatever to enable the film to dry quickly with a hard brilliant surface. It is bright and clear, and gives a hard surface not easily scratched, which promises to be durable. The other varnish is made by Mr. Herbert Robinson, of Liverpool. It is a fine bright spirit varnish, requiring heat, and is applied in the usual manner. It gives a thin film, but very bright and hard, and promises to be an exceedingly good preservative to the negative.

Liverpool Dry Plates.—Our Correspondence columns this week contain two long letters, chiefly referring to the Liverpool dry plates, from correspondents travelling on the Continent, both letters on the same subject, oddly enough, arriving at the same time. The rule obviously imperative on a journalist is to avoid the insertion of anything even approximately tending to puff the trade productions of any establishment. The question of the commercial supply of trustworthy dry plates is a matter of such manifest importance to photographers that all information on the subject is valuable to the photographic community generally, and, fortunately, in this case, conflicting trade interests are not involved. The experience with these plates stated by our correspondents agrees with our own, which has, however, been of a more limited and experimental kind. The examples sent by "Amateur" have admirable qualities. The remediable defects in the plates which both our correspondents concur in pointing out will doubtless receive the attention of Mr. Mawdsley and the Company, from whom, we believe, although we have no personal knowledge of any of them, ready attention to courteous suggestions may be anticipated.

More Piracy.—Mr. Samuel Bunnett, carver, gilder, and printseller, Great Dover Road, Southwark, was summoned before Mr. Partridge, of Southwark Police Court, on Wednesday, by Mr. Henry Graves, printseller and publisher, Pall Mall, for unlawfully selling photographic copies of "The First Sermon," "The Second Sermon," "Finding the Text," "The Acquittal," "The Last Trip," "A Piper and a Pair of Nutcrackers," and "Ordered on Foreign Service." Henry Samuel Bunnett, his son, was also charged with selling copies of "The First Sermon" and "The Second Sermon." As far as the son was concerned, it was taken for granted that he was the other's servant, and he was therefore merely ordered to pay the costs on the two summonses against him; but the other deendant was sentenced to pay penalties of £5 on each of the twenty cases against him, or, in default of payment, to be committed for one month in each case. The younger defendant paid the costs, but his father was removed to Horsemonger Lane Gaol.

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To Correspondents.

W. R. C.—To paint clouds on landscape negatives requires skill in painting. The best plan is to take cloud negatives whenever opportunity serves, and so secure a stock from which suitable effects for various landscapes may be selected. You may either take them small, and then enlarge them to the size you require, or take them direct on large plates. Select occasions when the masses of cloud are well marked in light and shade; use old collodion and a lens with a small stop. 2. The specimen you enclose is very good for a photographer of six months' experience. 3. Gilding on glass is a business with which we are not practically familiar, nor do we know any journal dealing with such matters. The letters to which you refer are bit in the glass with hydrofluoric acid. The acid itself, in biting-in, gives a polished surface. The vapour of the acid gives a dead surface. If the acid be used, and gold leaf applied, it will give the polished effect to which you refer.

Photo. Operator.—We believe that Harrison's rest will answer such a purpose, judging from the examples of posing we have seen produced by its aid.

(?).—Carrier's sensitive albuminized paper does not require fuming. It is sold ready for use in the printing-frame.

The Ghost.—The markings on your backgrounds have the appearance of resulting from dirty plates. Are the glasses quite new, or have they been used before? In damp, wintry weather it requires extra care to secure clean plates, as a very little moisture in the atmosphere, causing the plate to be damp, will often cause the results in question. You have too much front and top-light, and you have a tendency to under-exposure. Your pictures will be better if you modify these faults.

C. E. F.—You will find some of the information you require in Mr. Highley's article read before the Society of Arts, which we are now publishing; also in Mr. Martin's articles in our last volume. If you write to Mr. Martin, 114, High Street, Ilfracombe, he will give you more details. 2. For the purposes you name and other general purposes, No. 1 on your list will answer much the best.

T. J. D. (Llandilo).—If you have produced the picture yourself, you secure the copyright by effecting the proper registration at Stationers' Hall before issuing or publishing the picture. The charge for registration is one shilling, and the cost of a form, which requires properly filling up, one penny. If you send full details and fifteen stamps to our Publisher, he will see to the matter for you. 2. Messrs. Robinson and Cherrill's address is Tunbridge Wells. We regret that the demands upon our time do not permit us to write private letters in answer to photographic queries.

John Birkett.—For the effective use of the opaque or Chadburn lantern a very brilliant light is required. A paraffine lamp would not serve. The lime light, or that of the magnesium, would be necessary. 2. We are not personally familiar with the "Wonder Camera," but understand that it is simply a toy. We cannot tell you how to make it. 3. We cannot give you any information relating to the "Aphrengescope." Possibly some of our correspondents may be able to do so.

Cymbo.—If you require architecture as well as landscapes, the most perfect and generally useful on your list is B; if for landscapes only, E will serve. 2. For field cameras, A is a better form than B.

F. R.—Almost every photo-lithographer has his own formula. We cannot tell you whether that of Col. James is vastly superior to others, but it evidently answers the purpose. It is stated as follows: 2½ ounces of bichromate of potash are dissolved in 10 ounces of hot water, and this solution is added to another consisting of 3 ounces of gelatine in 40 ounces of hot water. The process is not patented.

M. M. D.—The minute yellow spots on your prints are due to the formation of air-bubbles on the print whilst in the hypo, which prevent the perfect action of the fixing salt. The fact that you do not see the marks until the prints have been some time in the washing water confirms this view of their origin. It is difficult to state the various causes to which these bubbles may be due, or why they should be very persistent at times, and absent at other times. A friend has been recently much troubled with them for the first time in his experience of upwards of a dozen years. It is probable that longer floating of the silver bath, so as to secure perfect coagulation quite through the layer of albumen on the paper, will aid in preventing the formation of such bubbles.

R. K.—The flat, grey tone is due chiefly to the imperfection of the negative, which is evidently lacking intensity. When a negative is thin and weak, it is desirable to keep the tone warm, as any attempt to get a black tone generally issues in a weak, slaty tone. 2. We shall return to the subject of plain paper printing shortly.

S. Chapman.—The letter has been forwarded.

J. Carbutt.—Thanks. Geymet and Alker's work is published in French. It is not published in England. The specification of the process of Tessie du Motay is given in the News of March 2, 1866, but is somewhat ambiguously stated. The results are very good, but one plate will not yield more than two or three dozen—or, at most, four or five dozen—impressions. The printing surface consists of a layer of bichromated gelatine, which, after exposure, acquires the property of an image on a lithographic stone, some portions absorbing moisture and repelling fatty ink, and others of repelling water and taking ink. When this prepared layer is therefore first treated with water and then with ink, the latter forms an image which, by pressure, is transferred to paper. We have a high opinion of Woodbury's process, and believe it will prove a success. We will endeavour to find time to write soon.

J. Bateman.—Thanks. We shall have pleasure in receiving a copy of the print.

W. Morley.—The letter was forwarded.

A. Nelson.—Received; and D. W. Winstanley, thanks.

Several Correspondents in our next.

Several Articles in type are compelled to stand over until our next.

THE PHOTOGRAPHIC NEWS.

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APR 1959
PATENT

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PHOTOGRAPHS ON TINTED PAPER.

FREQUENT attempts have been made to introduce into photography papers having slight tints, so that the image, instead of graduating from white to black, should have its range of tones somewhat varied, a rose tint, a straw colour, a grey, &c., forming the highest light. For some subjects this is doubtless effective; a hard negative printed on a tinted paper would yield a less crude effect than on pure white paper. Even with a fine negative sometimes the effect will be pleasing. A chalk drawing on a tinted board is often more effective than one on a white surface. A fine engraving is generally finer with the low-toned lights of india paper than with the brighter lights of white plate paper. The prints, on tinted drawing paper, of Mr. Arthur Taylor and M. de Constant are far more artistic and pleasing than similar prints on pure white paper. The attempt made some half-a dozen years ago to introduce tinted albuminized papers failed, chiefly, we believe, because the colours—pink and lavender—were not the best for pictorial purposes. A fresh attempt is now being made, which, if judiciously managed, may be more successful with photographers and the public.

Singularly enough, the attempt appears to be simultaneous in this country and America. We had just received a parcel of samples from Messrs. Bovey and Rivot, when we find, in our Philadelphia contemporary, arriving a few days later, that the fashion is rapidly becoming popular. The samples to which we have referred contain tints of rose, grey, straw colour, and a delicate green, and are made both with albuminized and matt surfaces; and both, so far as we have had opportunity of trying them, answer admirably. For our own taste, the straw colour or India tint is decidedly preferable, the effect with a large vigorous portrait head being very fine.

In America, it appears that the lights are touched with white, to give the effect of a drawing on tinted paper in black and white crayons. It appears to be the practice in America to apply the colour after the picture is produced. This is easily effected in a variety of ways. Some years ago we produced some pretty effects by immersing prints in a dilute solution of a brown aniline dye. Our Philadelphia contemporary gives some recipes for producing the result with other preparations, some of which we subjoin. Make solutions No. 1 and No. 2 as follows:—

No. 1.

Madder	... 100 grains
Powdered alum	... 50 "
Water	... 32 ounces

Boil fifteen minutes, strain, and filter through paper.

No. 2.

Bismarck brown (aniline)...	... 8 grains
Warm water	... 32 ounces

Pass the prints through No, 1, wash, and then pass them through No. 2. It is better done after washing the prints and before drying them. The depth will vary with the time of immersion.

The following is said to give rich tints:—

Garancine	... 60 grains
Alum (powdered)... ...	... 30 "
Whiting	... 10 "

Boil together ten or fifteen minutes, filter, and use warm, varying the time of immersion of the prints to taste.

Garancine is described as the extract of the colouring matter of French madder, mixed with the carbonized residue resulting from the action of the oil of vitriol on the woody fibre and other constituents of madder.

The prints are distinguished in America by the name of the familiar lithographic drawing studies, "aux deux crayons."

◆

DANGER OF COATING NEGATIVES WITH INDIA-RUBBER.

WE had occasion a short time ago to caution our readers against the use of india-rubber as a coating for collodion films, our attention having been called to the loss of some valuable negatives to which india-rubber had been applied. Important confirmation of this caution has recently reached us. Dr. Vogel writes as follows:—"I have read in your Journal some remarks on the effect of coating negatives with india-rubber for preserving them. I have on this subject some experiences which are dreadful. I have coated some of my Aden landscape negatives with india-rubber-benzol solution before varnishing, and after my return to Berlin I found on these negatives a large quantity of white opaque spots. I removed the varnish coating with alcohol, and varnished the negatives afresh. The spots disappeared when pouring on alcohol, and the negatives became clear, but after a fortnight the white spots appeared again, and now I am obliged to remove, in periods of a fortnight, the varnish with alcohol, and revarnish, touch up the negatives anew, &c. It is very easy to conceive that the negatives will not be better with this barbarous treatment, and with sorrow I foresee the whole of these precious negatives lost.

"It is fortunate that I have not employed the india-rubber on the plates of the total eclipse, which are in the possession of the Royal Observatory.

"Another curious fact I observe on the plates from my travel is, that all plates made in Aden, varnished in the ordinary way, with German as with English varnish, look faint, like ground glass; whilst the plates made in Upper Egypt, with the same chemicals, and coated with the same varnish, are quite clear. I believe the reason is, that the atmosphere in Aden is for ever nearly saturated with dampness, whilst in the Desert and Upper Egypt it is very dry."

THE ACTION OF PERSULPHATE OF IRON IN THE DEVELOPER.

A fortnight ago a correspondent called attention in our columns to an extraordinary statement in a contemporary regarding the action of developers and of a persulphate in the ordinary iron developer, and asked for some comments on the error he noted. We briefly and courteously pointed out the misapprehension upon which the argument in our contemporary was based, carefully avoiding epithet or comment upon the article or the writer, deprecating, indeed, in some preliminary remarks, the introduction of expressions of discourtesy into scientific discussion. The writer in our contemporary, in responding, begins, we regret, for his own sake, to say, with some rude epithets, and speaks of our correspondent and ourselves as persons "deficient in ordinary common sense," ultimately attributing the allusion in our pages to his error to a desire to "gain some little notoriety by misinterpreting" his "plain statement." We have no intention of adopting the style of our contemporary, nor shall we pause to comment on his odd notion as to the value of the notoriety that could be obtained from such a source. The erroneous statements of a contemporary writer cannot be of the smallest possible interest to us, except so far as it becomes our duty to correct photographic error brought under our notice, and we only revert to the subject briefly in order to remove the confusion in which reply to our remarks has left the matter. The writer in question restates the case as follows:—

> In the article of ours which was impugned, we gave a short account of some experiments relative to the action of silver on persulphate of iron; secondly, we dwelt upon the well-known fact that an old iron developer acts more satisfactorily than a new one, owing to the presence of a small quantity of a persalt of iron; and, thirdly, we endeavoured to explain how this persalt of iron acts beneficially in the developer. If we understand our critic's meaning aright, our remarks on the two first points pass unchallenged—no doubt because they contain statements of fact which the merest tyro in photography would be capable of proving to be true. But it is to matters connected with our explanation of the *modus operandi* of traces of persulphate of iron in the developer that exception is taken.

In this summary our contemporary is once more altogether in error. We did not challenge his statement that he had made some experiments; of course not; why should we? We *did* challenge his second point: not, indeed that an iron developer acted "more satisfactorily"—although that is a "statement of fact" doubted by some who have more experience than the "merest tyro"—when a persulphate was present, because no such word or phrase was employed in the first erroneous article: but we challenged the statement that the presence of persulphate of iron aided in securing half-tone. The third point, of course, we challenged; because, if persulphate is *not* a source of half-tone, any explanation which assumes that it is so must be useless, if not foolish.

Without following the subject through the cloud of words in which it is enveloped in the writer's second article, we recur to the original error, which we quoted in his own words. This is really what we were and are concerned to correct. He stated that, "with a new and energetic developer, even in the presence of a full proportion of restraining acid, the deposition of silver on the lights of the negative takes place very rapidly, thus soon exhausting the silver carried by the plate, while the half-tones, owing to their more feeble definition, have failed to attract the notice of a sufficient quantity of the falling silver." This statement, we affirmed, and affirm, to be an error. With a new and energetic developer the silver is *not* unduly aggregated on the lights to the neglect of the half-tones. We pointed this out years ago; Mr. Carey Lea, as we showed by quotation, has repeatedly confirmed our view, and the general experience of photographers bears out our statement. Our contemporary stated that when an old iron solution containing persulphate is employed, the development being slower, "the half-tones receive their due proportion of the metal." This, we stated, and now repeat, is an error: slow development increases the tendency to aggregation on the lights, and the presence of persulphate tends to the production of contrast, and not of half-tone. The remarks of both M. Gaudin and Mr. Carey Lea, which we quoted, as well as the general experience of photographers, confirm our statement.

Our contemporary says, however, although we quoted several paragraphs in order that he might state his own view, that we did not quote those portions which made his meaning clear, and which showed that he was "dealing essentially with a question of degree." He now further states his position, and says: "To whatever this modifying influence of the persulphate of iron may be due, our experience of its use in the developer is that, whilst it diminishes the tendency to fogging, it increases the half-tone of the negative, unless the persalt be present in excess." If this be so, our contemporary appears to have had a singularly exceptional experience. We believe that the presence of persulphate of iron in the developer (in any degree) is inimical in such degree to the production of half-tone, not only in virtue of its action as a retarder, but probably, also, by consequence of its solvent power on the finely divided deposit of silver, such a solvent always attacking the half-tones first. The fact, whatever may be the explanation, is tolerably familiar to experienced photographers; but we feel it important to impress upon the practised operator that whilst an old brown developer containing persulphate is often a valuable aid to clean shadows and contrast, yet it is always inimical to half-tone, just in such degree as it is present, and the exposure should be proportionately increased to secure half-tone.

Mr. Russell Manners Gordon, whose works are unsurpassed in delicacy and half-tone, recently observed, in an assemblage of photographers, that he always preferred to make his iron developer fresh as he required it for use, because he lost delicacy and detail in the exact ratio in which the iron solution was old or peroxidized. Another striking illustration of the action of an old developer containing persulphate was recently mentioned to us by Mr. O. G. Rejlander. Having been engaged a few days ago in portraiture at a gentleman's house, he found, to his regret, just as the light was rapidly declining, that his stock of developer, made a few days before, was exhausted. As quickly as possibly a fresh solution was prepared and applied to the plate. Familiar as Mr. Rejlander was with the action of a new developer, he was altogether taken by surprise at the difference in result between the action of an iron solution just mixed and one which had been made a few days. The negatives had been intense and brilliant, the waning light indicated by a little tendency to black shadows and want of detail in the least illuminated portions. With the new developer, and a similar exposure, notwithstanding the waning light, the negative was full of detail and delicacy, no black shadows or excessive contrast; it flashed out rapidly, but was, of course, a little less intense than those produced by an old iron solution acting more slowly.

The writer in our contemporary quotes some remarks by Mr. Carey Lea, to the effect that in alkaline development softness is obtained when the operation is conducted slowly; and a suggestion is now thrown out to the effect that a little persulphate of iron in the developer tends to produce a condition intermediate between that of the ordinary iron developer and an alkaline developer. It is obvious, on the least reflection, that there is no analogy between the action of an iron developer and that of an alkaline developer. The iron developer applied to a wet plate, besides bringing out the image impressed by light, reduces a portion of the free nitrate of silver on the surface, and the degree of energy with which it effects this materially affects the character of the negative. When the alkaline developer is used, there is no free nitrate of silver present, and its office is simply to complete the reduction set up by light in the sensitive salts of silver in the film.

There is one point more which we regret that we must notice. The writer in our contemporary complains that we did not quote sufficient from his former article, and he now repeats in italics a sentence which he thinks we should have noticed. We will quote his sentence now. After making the erroneous statement that on rapid development the silver is most aggregated on the highest lights, he says:—

> This tendency to disproportionate deposition is increased by the frequent rockings of the plate, which some photographers consider necessary during development, for steadiness of the plate lessens the evil.

Having quoted the sentence, we do not see that it in any way aids the writer's position. But we must explain, as it formed the terminal sentence of a paragraph we did quote, why we omitted it. If we had quoted, we should have been compelled, as we are now, to point out the disingenuousness of the writer. The peculiar effect on the intensity or detail of the image produced by rocking the plate or holding it still had been for the first time pointed out in our pages a few weeks before the article in our contemporary appeared. This peculiar effect was first observed by Mr. H. P. Robinson, and, in noticing it, we had endeavoured to explain the theory of its action. The writer in our contemporary, without any allusion to the idea as a novelty, or as to its source, embodies it as a matter of course, and in his present article attributes it to another authority.

As to the relative restraining action of persulphate of iron and citric acid, it is not necessary here to enter into any discussion, nor as to the action of each in permitting the production of half-tone: we may state our own conviction, however, that a peroxidized iron solution is more inimical to half-tone than one containing a sufficiently restraining amount of citric or acetic acid.

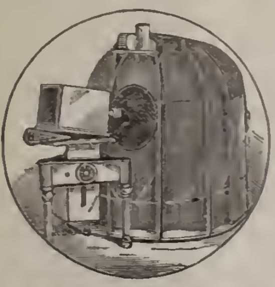
PHOTOGRAPHY AFTER DARK.

Under this head our esteemed contemporary, the *Philadelphia Photographer*, describes some facilities devised by Mr. G. K. Proctor, for rendering the magnesium light easily available for portraiture. Describing the arrangement, our contemporary says:—

"It consists in constructing a room for photographing purposes, of such a form that the rays of magnesium light placed within it will be reflected and concentrated upon the person or object to be photographed, so that photographing may be successfully performed at night by artificial light, or other than that of the sun.

"The room or apartment is of oval form, and elongated, so as to have an internal curved surface which will reflect the rays of light from a lamp or other luminary, in proper place, upon the subject.

"It is made of oak bows bent into proper shape, and covered with paper cloth, which, by large eyelets in the edges, is hung on hooks inside the bows. It stands about 6 feet high, 5 feet wide, 6½ feet long, and weighs about 35 pounds.



"An opening is made in the curved end of the room or apartment for the end of the camera (which is adjusted by the operator outside) to pass through, and the other end of the room or apartment is open to admit of the ordinary background for the picture, to be placed in proper position relatively with the person or object to be photographed.

"The figure above shows the position of the whole apparatus needed in operating at night in working position. Mr. Proctor uses a kerosene lamp for focussing, and feeds the magnesium for lighting the subject by means of a clock-work lamp.

"To this lamp an indicator is attached, which may be set at the discretion of the operator to indicate when the time necessary for an exposure has expired. This lamp may be seen at the top of the figure, the highest point being the chimney for the escape of the smoke of the metal. Of course the camera-stand and camera, with the lens pointing into the room, are understood. The upright white lines in the figure represent the bows, and the horizontal line near the bottom a cord used for drawing in the cloth to make it curved inside. The edge of the background may be seen at the back part.

"Mr. Proctor declares that the best part of his *day's* work is done at *night*. He applies his invention to solar printing and copying also. The cost of making a card negative for light is, he says, about nine cents, and the exposure fifteen to twenty seconds."

Our contemporary adds:—

"We have some very good pictures made by Mr. Proctor by means of his useful invention."

PLAIN PAPER *v.* ALBUMINIZED.

BY G. R. FITT.

As there seem now to be some hopeful signs of a desire on the part of the best photographers to experiment in the direction of a thoroughly efficient substitute for (at once) our old friend, and, I fear it must truly be said, our old enemy, albuminized paper, and seeing that "An Old Photographer" quotes from the *Scientific Review* an opinion much in accordance with my own thoughts—"It is surprising that millions of eggs should be taken yearly for the purpose of coating photographic paper with a perishable substance"—I have thought it worth while again to state a formula, published by me many years since, which gives the finest results I have seen on plain paper; and I have recently seen some large prints done by myself, on both French (Canson's) and English paper, which are as good as on the day they were made, October, 1856, being warm and rich in tone, the whites pure, the blacks rich and velvety.

The salting formula is:—Whey, from really good milk, which has been once skimmed to remove the fat or cream, 40 ounces; chloride of ammonium, 5 grains, or an equivalent of any other chloride which may be preferred. Dissolve and filter.

Float the paper, taking care to use the smooth side, 30 to 50 seconds according to thickness. Dry quickly, and keep in a dry place. Silver bath, 40 grains, or more for those who wish to be extravagant; I do not see that it gives better prints. Dry quickly.

I have used all toning formulæ with this paper, and all give good results. The prints I mentioned were toned with what is known as the *sel d'or* bath, extemporized with gold chloride and hyposulphite, then fixed in fresh hypo not over strong (3 ounces to the pint). Owing to the paper being less horny, and, therefore, less retentive of soluble matters than our friend albuminized, the washing is more complete in a given time. I have some prints on albuminized paper from the same negatives, done at the same time, which have lost much beauty, and, in some cases, are of a greenish tone, though they have not in the strict sense faded.

I remember when first of all albuminized paper came into note (1854), a photographer had just begun its use, and was employing a toning bath containing all the devilments of the baths of those days, and warranted to sulphurize any print at a short notice. He had a print from a fine negative of wood scenery, which was considerably over-printed, and he left it twenty-four hours, or thereabouts, in the said bath. It was reduced to just the right depth, and of a fine green tone, rather yellow and warm in the lights; he was delighted with the results. *Beatus vir!* he dreamt not of the terrible polythionic series, to be brought to light by the researches of Mr. Hardwich. I believe, from the fact of this change also taking place in well washed prints after the course of years, when on albumen paper, and not in their fellows on other paper, and also from its prevading uniformly the whole print, and not, as in real samples of fading from careless washing, coming in spots and patches, that it may properly be ascribed to the presence of the albumen, or of its naturally combined sulphur. Probably, in Mr. Hennah's process, the use of gold in salting the plain paper prevented, as you suggest, the sulphuration of the print by the objectionable toning bath. I know one very print by the latter gentleman's process which has hung for the last dozen years in dangerous proximity to a gas-burner, and in a place liable at times to damp, and is yet as pure as ever, the delicate tones in a white lace cap being remarkably preserved.

I need hardly say that the encaustic paste now being used will furnish a means of applying any amount of gloss where desired.

Regarding the public taste, I agree with that able "Old Photographer," that we have much in our own hands. For those who insist on sticking to a vitiated taste, we must for a season (especially for C.D.V.) stick to the eggs; but many of our customers have now sufficient art education or taste to acquiesce in a manifest improvement; others may be persuaded; not so, perhaps, those of the class to whom an old lady belongs, who, whilst waiting for some photographs which had been taken for a friend of hers, and seeing the rolling-press in full operation, said to a lady also waiting, "Lauk, mum! what a useful thing is them wringing machines!"

I may just add, that I do not find the ammonio-nitrate answer with this formula, but I have not tried fuming. Contrary to all past experience, I have lately met with a sample of albuminized paper which is spoiled by fuming.

IRON DEVELOPMENT FOR DRY PLATES.

BY ALFRED NELSON.

I am strongly inclined to think that iron will be found a most useful developer, if not *the* developer, in dry-plate work, as it is now in the wet process. All that is necessary to make use of in an iron developer appears to be the bringing of the dry film into a state as nearly as possible similar to that of the wet before development; the difficulty is to overcome the waterproof state of the collodion film when once dry. If we could find some substance which, when introduced into collodion and dried with it, would, when immersed in water, again assume the soft state, a great point would be gained. That the film can be to some extent softened, and iron development employed with great advantage, there is no doubt, as I practically proved the other day when working dry plates. In this case the development by iron was completely successful after pyro had signally failed to bring out even the faintest trace of an image.

Having to "do some bits" of architecture at a certain hour one morning, I prepared for that purpose dry plates by Mr. England's modification of the collodio-albumen process, as, having been a believer in albumen with collodion for some years, I adopted this arrangement during last season, and always with great comfort and success. On the occasion in question, however, a hitch came, commencing with a dirty dull morning, thick haze, which seemed determined to hold on as the hour to go to work approached. It did clear a little, but very little, and we had to "go in;" bad enough looking, even for wet work.

Plates were exposed—three times longer than wet ones would have been—pocketed, and taken home. In the evening, development was proceeded with by wetting the plate with water and pouring on a 3-grain solution of pyro—no trace of an image; washed off, and poured on fresh solution—still no trace after a long time; then tried a solution of pyro and acetic acid, with a few drops of silver solution 10 grains to the ounce, in the hopes of coaxing out something, but it was no use, even after two or three repetitions of the latter dose—pronounced to be a fatal case of under-exposure; yet I would not give up. The plate, when washed, appeared quite clean and free from any stains, so I gave it a thorough rinsing under the tap, to remove any pyro, set it up to drain, and determined to try what iron would do.

I had some fine old 80-grain iron solution in stock; this I decided on using, and proceeded as follows:—I made up a mixture of—

Alcohol	3 ounces
Ether	1 drachm
Water	3 ounces
Nitrate of silver	30 grains,

with which I covered the plate in a dish, putting over all a sheet of glass, and allowing the plate to soak for seven or eight minutes; then, taking it out, drained it well on blotting-paper, and poured on the old iron solution. To my great satisfaction, out came the image steadily, and with very much the appearance of a wet plate fully exposed, and was in every way as good a negative as could have been taken by any process, wet or dry, on such a dull morning. All the other plates were then treated the same way, and yielded as good pictures.

These facts argue very strongly in favour of iron, and I mean to see what it will do under more favourable circumstances. I think it very probable that the latent image is as fully impressed in a dry as in a wet plate, time for time, and that the whole secret lies in getting at it.

Twickenham, February 8th, 1869.

ON THE PRESERVATION OF NEGATIVES.

BY WILLIAM ENGLAND.[*]

Any suggestion bearing on this subject will, I am sure, be welcomed by any unhappy sufferer who, like myself, is destined to make the disagreeable discovery, from time to time, that "a thing of beauty" is not always a "joy for ever," particularly when one takes hold of a valuable negative which has been stored away for some time, and discovers the fact that its beauty is destroyed beyond redemption. I presume most photographers have met with these misfortunes, and will readily understand the nature of the injuries alluded to. I refer to the splitting of the film, and formation of minute cracks all over the picture, or the film itself rising into ridges. This last, by the way, I have seldom seen with my own negatives, but some photographers experience this form of disease only; others, lik myself, are more afflicted with the former, whilst some few operators claim exemption from all kinds of disorder. As I do not happen to belong to the last-named fortunate class, cases of necessity have compelled me to endeavour to find out the cause, or discover a preventive, of the evils before mentioned. No doubt one, and perhaps the primary, cause of the deterioration of negatives is insufficient washing; yet when every possible care has been taken, we cannot be quite sure that our negatives are safe.

I think the suggestion made by Mr. Spiller, a short time since,[†] to store the negatives, or the boxes containing them, in a sort of Norwegian cooking apparatus, or receptable lined with felt or other non-conducting medium, is likely to be a valuable idea. This plan would, no doubt, be a protection against sudden changes of temperature, and, to some extent, also against moisture. I have made many experiments with the view of finding a perfect protection for the negative; but no plan has yet proved quite reliable. I feel convinced that the varnish alone cannot always be depended upon; for I have tried many samples, and in no case have the negatives been entirely preserved from injury, though some have become spoilt sooner than others. I think if we could cover the negatives with a substance calculated to hermetically seal up the film, so to speak, when out of use, a step would be gained; and with this view I have been led to try the coating of the film with white wax. This can be very conveniently effected in the following way:—Dissolve virgin wax in oil of turpentine to about the consistence of thick cream. Apply this composition with a plug of cotton-wool to the varnished negative before putting it away in the plate-box. When again required for use, slightly warm the negative, and rub the surface with a piece of clean cotton-wool. The wax is easily removed, and the surface presents a nicely polished appearance, and, at the same time, any dirt that may have been adhering to the negative is removed with the wax. Plates protected in this way I have purposely subjected to very rough treatment, such as extremes of temperature, moisture, and exposure to strong acid fumes, without the slightest injury resulting. I feel very sanguine that by waxing the negatives before storing them away an efficient protection will be afforded. As a final remark, I may say that I have never known a negative to become spoilt by the splitting of the film so long as it remained in the pressure-frame and was constantly printed from. On this point I can speak decisively, as some of my negatives have been in constant use for many years, and not a single instance of injury of the above description has occurred. This seems to prove conclusively that it is only necessary to protect the negatives from atmospheric influences when not in use.

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[*] *The Photographic Journal.*

[†] Year-Book of Photography, 1869, page 37.

ON ACTINOMETRY.

BY LOUIS BING.*

In introducing to you this evening the subject of Actinometry, I would ask your kind indulgence as to any erroneous expressions I may make use of, as I am not perfectly acquainted with the English language.

Having carried on a series of experiments, by means of tubes of various magnitudes, and with mica actinometers which were inserted at the bases of tubes, the following results became apparent:—

1. That diffused light, on entering a tube at one end, varies in intensity within the tube inversely as the squares of the distances from the aperture where the light enters.

2. That any number of tubes, whatever their magnitudes, contain the same intensity of light, if the ratios of their diameters to their length are equal, and if we absorb the light that may be reflected from their sides.

As a corollary it may be added here,—

That light varies in intensity within a tube inversely as the squares of the semi-diameters of the tube.

3. The same variations in the intensities of light also take place upon the sides of tubes, although the intensity of light at any given point on the side of a tube is not equal to the intensity at the same point within the tube.

4. The above theorems govern also the variations of the actinic powers of light within tubes, and on the sides of tubes.

Let me now draw your attention to an instrument which I have constructed upon these principles, and which I name the Tube Actinometer.

It consists of a rectangular box, to one side of which a square tube is applied. At the aperture of the tube there is a slide with a rectangular opening, by moving which you can either admit light into or exclude it from the tube. One side of the tube is made of yellow non-actinic glass, and the opposite or interior side is made of white glass. By looking through the yellow glass you can watch the action of light in the tube by simple inspection. A scale is marked on the strip of white glass by means of a standard tint. The side of the box to which the tube is fixed is made to take off, and is held in its place by means of four little springs, like the back of a dark slide. A cylinder is placed within the box, against which the white glass of the tube is pressed, and which is surrounded with sensitive paper. The top of the box, where you see a milled head, is also made to take off. This milled head is fixed to a rod which passes through the cylinder, and by means of which you are enabled to turn the cylinder either way. By unscrewing this little top piece you can remove the milled head, and then the top of the box. Now you can also lift the cylinder out of the box for the purpose of charging it with sensitive paper. This is done once, in the morning, for the work of the whole day. After inserting the cylinder you replace the top of the box, the milled head and its little screw. Fix the side with the tube, and you have only for every fresh exposure to give a slight turn to the cylinder, by means of the milled head, in order to bring a fresh part of the paper forward, at the back of the white glass.

The standard tint with which the divisions of the scale are marked is not a necessity; it is simply a matter of great convenience, because you are enabled thereby to make use of a comparatively short tube for very long exposures. It might be compared to the use of cwts. upon a weighing-scale, instead of using only qrs. of cwts., for example. The scale presents a series of little spots which appear dark by contrast with the white paper. As the action of light proceeds downwards within the tube, one spot after another will appear white by contrast with the sensitized paper which has become darkened. The distances between the ten divisions of the scale have been so calculated that not only do they form an harmonic progression, but also, when any given spot appears white, the next following will still appear dark by contrast. A few exposures for various periods of time may be seen on the instrument.

The capacity of the screw to turn either way is an especial point which I aimed at in the construction of this instrument. The human eye can only judge reliably of tints by comparison; but even there it is apt to err. In comparing, however, a whole series of tints with one another, the possibility of error is reduced to a minimum. By turning the screw slightly back, you can at any time bring your last exposure side by side for comparison with your present exposure at the back of the white glass, and you can judge with the greatest exactness, by simple inspection, if the two series of visible tints are alike or not.

We have now arrived at the object of this instrument. It is to print all photographs by its aid.

The actinometer is intended to remain stationary at the place where you expose your negatives. Ascertain, by inspection of your first positive, what degree of exposure you require for the negative, exposing during the same period of time the instrument by opening the slide. Mark now upon the negative the number which you observe in the instrument. On printing your second positive, you wait for the approximate appearance of the number, which you can observe through the yellow glass. Then, grasping the milled head, you turn the cylinder slightly back in order to compare your second exposure with the first, and thus continue from time to time to turn the screw until you find the two series of tints exactly alike. The second positive will now have the same tint as the first. Thus continuing, you gain the important advantage of printing all your positives of exactly the same tint, which it is scarcely possible to accomplish by the method of printing by inspection now in common use; on the other hand, over or under-exposed pictures are here only possible through the most wilful carelessness. In fact, you produce superior work and avoid losses. If you wish to gain (I would almost say) perfection in the equality of the tints of your positives, remove the actinometer from time to time to some obscurely-lighted place, take off the front, and then compare the tints which you see on the sensitive paper. This occupies no more time than examining a print in the frame.

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* Read before the Photographic Society of London, February 9th, 1868.

Allow me to express the opinion that by introducing this novel feature in the production of photographic pictures, the patrons of photography may be disposed to pay better prices, and the profession might get rid of the injurious depression which exists at the present time.

I must, however, state now, that this instrument is not constructed for exposure to the direct rays of the sun. The direct rays must be screened by means of a blind made of tissue-paper or fine linen, both from the negatives and the actinometer, in order to enable you to print by their action; or ground glass may be used instead, in order to render the parallel rays of the sun diffused. The screen or ground glass should be fixed at some distance from the negatives and instrument.

I venture to recommend photographers never to print in the direct rays of the sun at all. It is well known that a positive which is printed in diffused light has more depth in the shadows and more brilliancy in the high lights. When printing in diffused light, the photographic action starts, as it were, from all sides, and encircles every particle composing the negative, which does not take place with the rapidly piercing parallel rays of the sun, and which may be the cause of the superiority of positives printed in diffused light; also the brown tone which seldom leaves the sun-printed positives during the processes of toning and fixing, even if not objected to, gives a certain flatness of appearance to the positives, in consequence of a want of depth in the darkest shades.

A much smaller instrument than that now exhibited will be manufactured for the purposes of the field, applicable, for instance, to the timing of the exposure of dry plates.

For scientific measurement of the actinic power of light, a wider tube is used. The more exact and minute you wish to make your calculations, the wider the tube must be, because the divisions of the scale can then be greatly augmented.

By applying clockwork to the screw at the base of the cylinder, for the purposes of giving the latter a slight turn at any chosen division of time, the actinic power of light at any given locality is registered for the whole day. No assistant is required. The instrument is charged once in the morning, and in the evening you remove the sensitive paper with all the changes of light that may have taken place during the day registered thereon.

For measuring the actinic power of the direct rays of the sun, a convex mirror is applied to the aperture of the tube. The tube is inclined at a right angle to the rays of the sun, and the mirror is so applied that it reflects the rays of the sun in divergent directions into the tube. In order to make these measurements continuous and correct, the whole apparatus must be placed in connection with a heliostat

In concluding this subject, permit me once more to refer to the principles enumerated at the beginning of this paper. I would observe that by their application you can calculate the exact quantities of light that are admitted into any photographic studio, or that fall upon any particular spot therein. If you want to increase the power of light in any of your studios, the most efficacious means to accomplish this would be to cut down the sides, to lower the roof—in fact, to dwarf them; a much greater quantity of light would then be admitted through the skylights.

In the erection of all kinds of buildings, architects could calculate the exact quantities of light which are admitted into rooms of various dimensions, and they could thus avoid a deficiency of daylight illumination in large meeting-halls, workshops, or offices, whereby a saving of artificial lighting might often be effected.

THE PORCELAIN PICTURE.

How to Make It.

BY GEORGE H. FENNEMORE.*

Many excellent formulæ for the production of these beautiful pictures have been published, both in Europe and the United States, and, therefore, I have nothing, perhaps, that is new to offer in the shape of formulæ, my object being more especially to point out some of the reasons why many fail to produce good results with any degree of uniformity.

As the collodio-chloride process is the one principally used, and as it is the one most beset with trouble to the inexperienced, I shall confine myself chiefly to it. With care, however, it may be made to work with great uniformity. I have tried many of the chlorides for the production of chloride of silver in collodion, but can find none that answers so well as lithium. My formulæ for collodio-chloride is as follows:—

Nitrate of silver	60 grains
Chloride of lithium	8 „
Citric acid	8 „
Plain collodion	8 ounces.

A French journal recommends the use of tartaric acid in place of citric acid, as giving more brilliant results, but I do not find it so. Perhaps it is because I could not get as pure a sample of the acid here as can be obtained in France. Those who wish can try it; the proportions are the same. The general complaint of those who fail in making porcelain pictures is, that the collodion will work very well for a day or so, and then becomes useless. There may be several reasons for this, but the principal trouble is in the mixing. The ingredients are generally dissolved in water, and added to the collodion. Now, unless great care is taken in mixing them in this way, failure will be the result from the start. The reason is that ether and alcohol dissolve but a very small portion of nitrate of silver, and when a solution of silver in water is added to the collodion, the excess of ether and alcohol will precipitate a large portion of the silver to the bottom in very fine, transparent crystals, which are not visible on account of the creamy appearance of the collodion, and thus we are deprived of the excess of free nitrate of silver which is absolutely necessary for the production of brilliant pictures. Moreover, the result is a rusty-looking, slate-coloured print; whereas, had the proper proportion of chloride and free nitrate been combined in solution, the result would have been a vigorous print, of a bright cherry-red colour.

Another thing should be borne in mind, that when two solutions are poured together, the one having the power to precipitate the contents of the other, they should always be poured together very slowly and with frequent agitation, unless, indeed, we wish to produce a precipitate on the bottom of the vessel in the shortest possible space of time. In making collodion we want the reverse, *i. e.*, a very fine deposit, and to have it remain suspended in the collodion for the longest time possible. A collodion that allows the chloride of silver to fall to the bottom in any appreciable quantity will never make a first-class picture.

Having given the above explanation of the nature of precipitation, for the benefit of those who do not fully understand it, I now proceed to give my method of making the collodio-chloride:—To four (4) ounces of ether and three (3) of alcohol, I add forty (40) grains of gun-cotton; dissolve, and filter. I have two 8-ounce bottles, the one containing the filtered collodion, the other empty. I now put sixty (60) grains of silver in a small mortar, and pulverize it very fine. I then add a few drops of water—not enough to dissolve it, but enough to make it into a white, pastey mass. I now pour in a small portion of the plain collodion, and triturate it with the pestle until saturated, then let it stand for a minute or two to let the undissolved portion settle to the bottom; then carefully decant it into the empty bottle, pour more on from the stock-bottle, grind, and decant as before, and so on until all is dissolved. In this way I get the silver in perfect solution. So far, it can de done in the light. Now I wash out the mortar, and put in the eight (8) grains of chloride of lithium, eight (8) grains of citric acid, and one (1) ounce of alcohol, and dissolve. I now go into the dark room, and add it to the collodion, a drop or two at a time, shaking thoroughly after each addition until all is added.

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* *Philadelphia Photographer.*

It is now ready for use. This collodion does not look white, but has a thin, bluish-white look, partially transparent, and without sediment. It will work well to the last drop.

The plates should be albuminized with fresh albumen, and be perfectly dry before being used. They should be toned in a very weak toning bath, say 1 grain of gold to 10 ounces of water made slightly alkaline.

THE ALBUMEN PROCESS.

By this process very fine pictures may be made, perhaps even better than with collodio-chloride, but it is somewhat more troublesome. Proceed as follows:—Take the whites of 4 fresh eggs, and 2 ounces of water in which is dissolved 8 grains of chloride of strontia, and beat them up together to a stiff froth. They should be beaten until you can turn the dish upside down without the contents falling out. Set aside for several hours to settle. When you wish to use it, filter it through a clean piece of flannel, and coat the plates evenly with the albumen. Should it show a disposition to flow unevenly, breathe on the plate; this will give a layer of moisture that will allow it to flow as desired. Rear them up in a place free from dust to dry. When you wish to print, sensitize them in the following bath;—

Water	8 ounces
Nitrate of silver	240 grains.

Dissolve the silver in the water, and add 3 or 4 drops of glacial acetic acid, then add 8 ounces of alcohol. This gives a bath containing 16 ounces of solution, with 15 grains of silver to each ounce of solution. The large proportion of alcohol is added to coagulate the albumen, and, more particularly, to allow the plate to dry evenly and quickly. The plates should be dipped in a vertical bath, the same as for collodion negatives, but the solution should be filtered, and the bath washed out before each lot of plates are sensitized; when dry they are ready to print. The only trouble to be apprehended in this process is scum and dust-spots on the plate. They can be avoided, as I said above, by albuminizing away from any dust, and having the solution and bath perfectly clean when about to use them. They can be toned in the ordinary bath, but should have a very weak hypo bath—say 1 ounce of hypo to 16 of water—to remain from five to ten minutes immersed in it, according to the temperature.

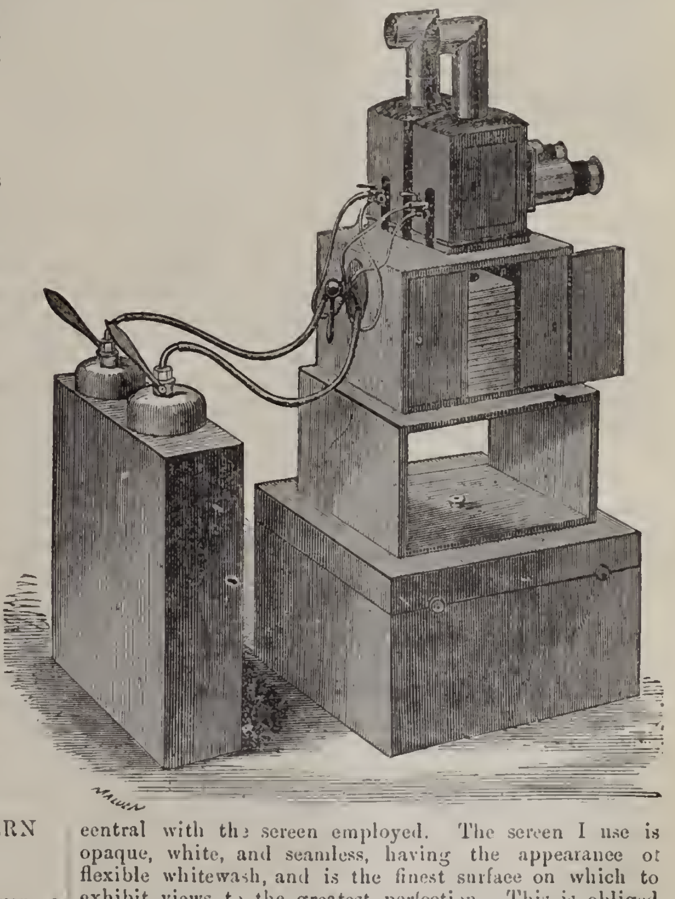
I hope a fair trial will be given to the above, and that the little extra trouble it gives to dissolve the silver in the manner pointed out will not be objected to. Should any of your numerous readers require any more information with regard to it, I shall be happy, through your journal, to give it to them.

PHOTOGRAPHY AND THE MAGIC LANTERN APPLIED TO TEACHING HISTORY.

BY SAMUEL HIGHLEY, ESQ., F.G.S., ETC.*

New System of Lantern Apparatus.—Having given a *resumé* as to what has been done in improving our sources of light since 1863, I may state that with the weaker ones, such as may be classed under the head of "hydro-carbon lamps," I found we must also look to our optical appliances to aid us in picking up all the light we could seize on to make the argand lantern what is desired for showing photographic transparencies, and for this purpose I introduced a triple condenser, which, in other words, means one of shorter focus than that in ordinary use, that enables us to get our light closer to it, and consequently to seize upon a greater number of the emitted rays. But this was not all. The sharpness and detail in photographic slides requires an achromatic lens for the necessary definition of the image on the screen, but a photographic portrait lens or any double combination lens absorbs too much of the light, which we can ill-afford to lose, so I employed a single achromatic power of wide-angle, to secure as large a picture as possible at a short distance from the screen, and I thus obtained a really brilliant and well-defined 10-foot picture, though I only aimed at an 8-foot one in the first instance.

The next point was to arrange all the apparatus in such a way as to bring it within the smallest packing compass, and render the lecturer as independent as possible of the ordinary obstacles that present themselves in a strange place. In the same box with the lantern I packed a cabinet to contain the slides, so contrived that they were always kept in methodical order for use, were never exposed to meddlesome hands, and could be put under lock and key the moment the exhibition was over. Over this cabinet slipped a shelf-frame, and when the case was unpacked all these parts could be clamped one above the other to form a stand for the lantern, which was then raised so as to be exactly central with the screen employed. The screen I use is opaque, white, and seamless, having the appearance of flexible whitewash, and is the finest surface on which to exhibit views to the greatest perfection. This is obliged to be wound on a roller to preserve its face. The packing-case for this, likewise, forms a supporting framework, so that by the above system I am able to place all my apparatus in any position I desire, untrammelled by the presence of furniture or wall pictures, that would, under ordinary circumstances, have to be removed. The apparatus can be arranged in a few minutes; and I can pack it all away as



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* Continued from p. 79.

quickly, thus giving the exhibitor the greatest amount of independence and the least amount of trouble in arranging his appliances.

I use a pair of the condensed gas bottles, arranged in connection with a gas dissolver, the invention of Mr. Malden,* but which I have since brought into very compact form, all being worked by a single cock and lever-arm. This arrangement dispenses with the use of the ordinary "dissolving fans," and gives the exhibitor far greater power in producing dioramic effects, for by the old method the lights in both lanterns were always and unchangeably of equal value, but by adjusting with a lever arm this gas dissolver allows of an exact balance being established between the scene and the superposed "effect," while both gases are economised, for if "dissolving" from one scene into another, the oxygen is gradually turned quite off one lantern, and only a small jet of hydrogen is left alight, for obvious requirements.

In conclusion, I must say that the honour of introducing this system of instruction into our collegiate establishments and higher branches of education is due to Colonel Tchepelevsky, backed by the Russian Government; thus, as I have said, in a foreign country he has introduced the thin edge of the wedge, and I will use all my power to hammer it home.

"AUX DEUX CRAYONS," OR TINTED PHOTOGRAPHS.

BY WILLIAM BELL.†

The following will be found a durable process for securing the tinted pictures now becoming fashionable, and dubbed as above. Make two solutions, viz.:—

No. 1.

Powdered aloes	1 ounce
Alcohol	12 ounces

No. 2.

Water	12 ounces
Liq. ammonia	15 drops

Immerse the albumen prints in solution No. 1 until they take a bright lemon colour, then wash them well, and put them in solution No. 2. Let them remain until they take a warm orange colour, and again wash them. Mount, and touch-up the whites with Chinese or any good white, and the blacks with india ink. After touching up the whites and blacks, coat the pictures with the following:—

Plain collodion	6 ounces
Castor oil	12 drops

The deeper the tint required the longer the prints must remain in the aloes solution. Too long immersion in the ammonia solution will reduce the tint.

Correspondence.

SIMPLE NITRATE BATHS *v.* DOCTORED BATHS.

Mr. Editor,—I once more introduce a subject in the columns of the Photographic News cautioning the amateur and inexperienced student against quackery of the nitrate of silver sensitizing bath, &c.; and in attempting to do so I wish to impress on their minds that I state my experience openly and candidly, not only from theoretical knowledge, but also from well studied and elaborate practical experience.

The valuable discovery of Mr. Archer in perfecting the agency of collodion in the practice of photography is now nearly eighteen years old. During this period great improvements in the collodion process have been made in various ways, and we may still look forward for its further progress, as we hope it has not yet attained the limits of its perfection. It should be acknowledged that much merit is due to each individual person who took an active part in the advancement of the art, which should be gratefully remembered by all its followers; and, on the other hand, it is well to caution the student against placing confidence in unfounded theory, an example of which appeared lately in one of the photographic almanacs. This part shall not make further reference to, but I wish to make the student sensible of the mistaken notion that long discovered and condemned formulæ are to be again brought under notice, as such have been allowed to fall into disuetude. It would be therefore absurd to dwell any further on facts which were not in accordance with the laws which govern chemical affinity, and which are disapproved of in practice, as will be explained in conclusion; consequently, at this age of the collodion process, no discovery has acquired general recognition in practice but those found to give results of the greatest excellence, such general recognition sparing many disappointments, and enabling the student to follow fixed details, to produce with much certainty a successful photographic picture. I make this preliminary statement in order to impress upon the student more fully that amongst the various additions and supposed improvements devised from time to time in connection with this process, only those are selected which are correct on theoretical grounds, and are found in practice to succeed.

The nitrate of silver bath is the most important of all the solutions to the photographer, and its contamination by contact with any organic substance, or by a violation of the laws which govern its treatment, is so fatal to success, that all other efforts prove fruitless. Consequently, the first point in this direction the student has to guard against is, when making his bath, not to purchase impure nitrate of silver, not to use impurely distilled water, and to bear in mind that some samples of iodide of potassium contain many impurities, such as carbonate of potash, sulphate of potash, and chloride of potassium; and to ensure its purity and suit it for the nitrate of silver bath the safest way is to dissolve it in strong alcohol, and filter, as in this liquid both sulphate and carbonate of potash are insoluble. After the several precautions to be used in mixing the bath, similar precautions have to be observed in keeping it carefully from the various dangers of contamination; but all this comes very easy to the experienced photographer, and the student can only learn to do so by practice. But the student at this stage of photography has very little trouble in making rapid progress, as every part, step by step, is placed before him in type. Not so with the student sixteen or seventeen years ago; there was very little facility afforded him of any importance in this way; all was up-hill work; and so it was all endless study, close application, and perseverance to the end with him. Still, with all the facilities of the present day, it is strange to learn how some amateurs and inexperienced professionals treat chemicals as if they were sworn to cling to danger rather than shun it; and in observing their various modes of manipulation, preparations, &c., it will be seen that they stumble at a straw, and jump over a camel; by this I mean that they are over-exact in the wrong place, and careless where caution is imperative.

The student should bear in mind that dosing the bath is strictly prohibited, and that the simpler the bath is made the better and longer it will continue in good order. The use of cyanide of potassium and such nostrums to the nitrate bath—stopping nothing short of lime and mortar—should be explained to the student, so as to initiate him into a knowledge of the dangerous effects which are sure to follow. The method by which cyanide of potassium is prepared is fully explained at page 111, Photographic News, November 12th, 1858, in a letter by MM. Fordos and Gelis, who are manufacturers of this salt, which will show that the average percentage of five different samples was only 47 and 53 of foreign matter.

Cyanide of potassium has a strong alkaline reaction damp air, from the action of carbonic acid it smacks of hydrocyanic acid, or prussic acid, which is a cyanide of hydrogen. In solution it changes quickly. The salts are in all cases converted into cyanides, and exist in solution in the form of soluble double salts, which, unlike the double iodides, are not affected by dilution with water. As space does not permit of further illustration, in conclusion I add, for the student's further information, that photography is truly a science, and though operators may slightly differ in manipulation, chemists in the preparation of chemicals, and opticians in the manufacture of lenses, still the results yielded (photographic pictures) are obtained by fixed and unalterable laws; and, as our knowledge of the subject increases, we may fairly hope uncertainty will cease, and that the same precision will at length be obtained as that with which chemical operations are usually performed.

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* See the *British Journal of Photography*, March 29th, 1866.

† *Philadelphia Photographer.*

Clonmel, February 7th, 1869. Patrick O'Conner.

COCKLING OF PRINTS.

Dear Sir,—I have observed, in some of the late numbers of the News, remarks on the "cockling of large prints;" and the remedies there suggested not seeming altogether very feasible, I have ventured to advance my method, which is so simple it is a wonder it is not in general use everywhere.

I enclose a small sample of the "plate board" which I use for backing-up the prints instead of cloth, using five or six thicknesses, and then an addition of a layer or two of cloth. The paper can be used damp or dry; and since I have been using this board for backing I have never had a misprint from the paper not coming in direct contact with the negative in every part; and sometimes have used from fifty to one hundred sheets per day.—I am, very respectfully, George R. Warren.

Cambridgeport, Massachusetts, February 1, 1869.

SECRET DODGES AND OPENNESS.

Dear Sir,—It seems very evident, from the remarks that have occurred in this paper during the last few weeks, that my letter published on the 29th ult. has been very much misunderstood. I am prepared to take the blame to myself, but, at the same time, would like to make a few observations by way of explanation, especially as I agree with nearly all that has been said, and yet remain unshaken as regards the little *exposé* that I wished to deprecate.

That Messrs. Robinson and Cherrill were perfectly justified in playing a good trick on the hypercritical critics is unquestionable; but that it was policy of Mr. Cherrill to expose the same publicly to the London Photographic Society is very questionable, especially as the criticism referred to emanates from a source that is totally unworthy of notice, and is best answered by being left quite unnoticed as well as unanswered.

There are very few but have heard or read most favourable criticisms of these art productions, and many enquiries were naturally made at the meeting as to where these unfavourable criticisms came from; and when informed, it was the opinion of others besides the writer that it was foolish to have noticed them, especially in the way and manner referred to; for not only was Mr. Cherrill anxious to state that a piece of earth had been used, but, to carry out that wise old saying, "Seeing's believing," must necessarily bring the very piece all the way from Tunbridge Wells, and, in a dramatic style, crumble the same to pieces before the eyes of the members, and exclaim, "There it is!"

Thus ended what, in my humble estimation, was (minus this exhibition) a very good and useful paper. I might say, in conclusion, that if Mr. Cherrill particularly wished to expose publicly the critics, and he had told us that a portion of a certain picture against the wall was not taken from nature, but was a trick played upon the hypercritical, and that it had not been discovered by anyone, he would have fulfilled all that could have been desired without disclosing what the trick was.

In some excellent remarks from yourself, Mr. Editor, you define between legitimate and illegitimate dodges, and this was, of course, a most illegitimate trick or dodge, the exposure of which, even under protest, was, I think, a mistake. I trust none of your numerous readers will think for a moment that I advocate secrecy in photography. I would most emphatically denounce anything of the kind as diametrically opposed to the advancement of the art; and such men as you name in your leading article are men worthy of honour, not only for their laborious researches, but also for their thorough openness. And whilst on this subject, I would like to remark that I consider those that neither contribute their experience through the medium of the press, nor assist in any way the various societies representing the art, are unworthy the name of photographers, whatever their individual success may have been.

Thus I trust it may be understood that, with the exception I have pointed out, I fully appreciate the able paper of Mr. Cherrill, but, at the same time, I cannot compliment that gentleman upon his reply to my letter. He takes very high ground, but fails in maintaining his position, for if Mr. Cherrill thinks his arguments are unanswerable, I fear he has a very incorrect estimate of his argumentative abilities. "Mr. Hooper" did "split on the rock," he admits, but not one word was said in his letter against the publication of the ingenious practical method employed by Messrs. Robinson and Cherrill for their combination printing. Such dodges as these are of immense value, and should always be communicated; and the best proof of my not having denounced such dodges is, that at the end of the letter referred to I give publicity to a dodge in combination printing that I am sure in the hands of many will prove of much value. As regards sending the communication to two papers, although partly unintentional, nevertheless, I think it bad taste of Mr. Cherrill to interfere with the individual rights of correspondents to the photographic press. Surely he may safely leave such matters to the discretion of the writer; and although he says, "I cannot approve of the plan," yet he must know that it is an every-day occurrence, and not usually deprecated.

Finally, as regards the remark—which, bye-the-bye, was a quotation, viz.—"that photographers did not tell all they knew." This I stated to be a great truth, and I still hold that opinion, though, of course, with very many exceptions; and I am glad to add, that I believe there is more openness amongst English photographers than continental, and it was more with reference to such as only publish parts of a process, leaving out the secret needful to success, that I alluded. I rejoice to think of the rapid progress that has been made during the twelve years that I have studied the art; and as I have for some time been an experimentalist, shall continue to have much pleasure in communicating my experiences from time to time. Thanking you, Mr. Editor, for your courtesy, I remain, yours truly,

68, *Canonbury Park South, N.* Geo. Hooper.

PERSULPHATE IN THE DEVELOPER.

Sir,—I feared that it would not be possible to correct an error in your contemporary without incurring a risk of provoking his characteristic rudeness. That your own moderate article and my letter have excited anger are the only things made plain. For the rest, whether he justifies, or modifies, or apologizes for his former error seems uncertain, for he appears to have a talent for "darkening counsel by the multitude of words without wisdom." I have no desire to enter into discussion with him; but I should like to know what he means by the "doubtful ruse of a *nom de plume*." What is a "doubtful" ruse? How is the use of a *nom de plume* a ruse? And, being himself without a name, an unknown, unannounced, impersonal *we*, what does he mean by "not seeking to escape from the responsibility" which may attach to his words by adopting a *nom de plume*? In what sense has this unnamed and impersonal writer a more definite name to boast of than yours, Veritas?

PHOTO-MEZZOTINTS.

Dear Sir,—Will you allow me to suggest the use of gelatine in thin sheets as a medium in producing the mezzotint photographs described in your article last week. I found this substance to answer admirably when experimenting in this direction a few years since. Any requisite thickness may be used without materially obstructing the light. The kind I used was that used by confectioners for cases or envelopes for sweetmeats; it is nearly colourless, allowing several thicknesses to be employed if required. Probably it would be better to make sheets of various thicknesses by pouring on to a glass plate alternate films of plain collodion and gelatine.—I am, dear sir, yours truly,

Hackney, February 16th, 1869. B. J. Edwards.

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 8th ult., M. Balard, President, in the chair.

M. Carlos Belvas, a Portuguese gentleman, presented the Society with an album of photographic specimens, among which was a picture of the tomb of Ines de Castro, taken by means of magnesium light, demonstrating satisfactorily the great degree of brilliancy and clearness which may be possessed by photographs produced in this manner.

M. Davanne, in the name of M. Chevrier, presented two prints obtained from a heliographic plate of Nicephore Niepce.

M. Blanquart Evrard called attention to some photographs produced between the years 1851 and 1855 by means of his old printing process, which had not suffered any alteration since their production.

M. Soulier, in offering to the Society several prints produced upon a carbon pellicle, and fixed to glass, called attention to the manner in which photographs of this kind may suffer alteration. If enclosed between two glasses before being perfectly dry, and before the gelatine has been rendered completely insoluble, the gelatine is apt to allow the pigment in suspension to separate itself, and the picture is hereupon spoilt; care should, therefore, always be taken to render the gelatine insoluble, and to ensure the perfect desiccation of the plate, when the latter will be found to be of a very permanent character.

M. de Gaffier produced a collection of prints which are to form part of the illustrations of a new work by that gentleman. The book is to contain 200 photographs, produced by means of MM. Tessie du Motay and Marechal's process, the copper plates from which they are struck off being capable of yielding 250 copies.

MM. Davanne and Girard announced the completion of some satisfactory results with MM. Schaeffner and Mohr's carbonate of silver printing process. The investigation with the material would be continued, and, in the meantime, it was hoped that other photographers would make trial of the paper, specimens of which the introducers would be happy to provide any member with.

M. Romain Talbot, in the name of M. Liesegang, presented the Society with a specimen of pyroxyline manufactured from paper. This product, to which the inventor had given the name of *papyroxyle*, possesses the property of being easily dissolved in alcohol and ether, and exerts no action whatever upon the iodides and bromides.

M. Davanne had experimented with the product, and confirmed the statement that the material dissolved readily without residue.

M. Brиois questioned the novelty of the preparation, which was used by all manufacturing chemists.

M. Romain Talbot admitted that paper pyroxyline had been prepared for some time past, but this was the first time of its having been manufactured in large quantities.

M. Marion presented the members with some specimens of his new printing material, denominated *papier mica chloruré*.

A letter was read from M. Gautier, sanctioning, on the part of the Government, the proposal of the Society to hold a photographic exhibition at the *Palais de l'Industrie*, to open on the 1st May, and close 31st July.

The conditions relating to the exhibition were then read, and the members of the jury, fifteen in number, elected.

M. Duchemin read a paper on the Production of Photographs upon Enamelled Glass, and demonstrated at the same time the manner of operating, producing in the space of a few minutes a finished vitrified photograph.

The proceedings then terminated.

South London Photographic Society.

The usual monthly meeting of this Society was held in the City of London College, on the evening of Thursday, the 18th inst., the Rev. F. F. Statham in the chair.

After some routine proceedings, Mr. How proceeded to exhibit a fine collection of magic lantern slides, by means of an excellent lantern and the oxyhydrogen light. The Chairman (Mr. Statham) added considerable interest to the exhibition by some interesting preliminary remarks, and by comments of an instructive character on the various subjects—architectural, microscopic, &c.—which were exhibited. The exhibition concluded by some kaleidoscope effects in the lantern.

A brief conversational discussion on the value of photographic slides, and the importance of obtaining a number of series illustrative of the various sciences, followed, in which the Chairman, Mr. Sebastian Davis, Mr. Wharton Simpson, and some others took part; and after some votes of thanks, the proceedings terminated.

Talk in the Studio.

Prints with White Pigment on Black Paper.—Mr. Blair has recently favoured us with an interesting example of his work with white pigment on black paper, used instead of a black pigment and white paper, as in the carbon processes generally. The effect is peculiar and interesting; it illustrates strikingly the importance of the material forming the image possessing a proper amount of translucency to give gradation in the image. The print in its normal state seems hard and wanting in delicate gradations, but, on being moistened to render the layer of white pigment less opaque, we at once obtain a soft and well graduated print.

Photography for Book Illustration.—Mr Carbutt, of Chicago, informs us that he has just completed the illustration of a biographical work for which he has produced 50,000 cabinet portraits.

Bridal Card Envelopes.—Mr Solomon has recently called our attention to a very pretty selection of fancy envelopes for card pictures, suitable for bridal or other festal or complimentary gifts. Within the envelope is an aperture for the card picture, and over it an embossed and beautifully coloured wreath or bouquet of flowers. The designs are various, and all pretty.

The Sun.—An interesting lecture on the Sun was delivered by Mr. Norman Lockyer, a few days ago, at University College, in which the great aids furnished by photography to solar observations were especially pointed out. He said that the photographic age had advanced rapidly our knowledge, because it supplied an unerring picture of the changes and object; whereas the human eye, not being able, with certainty, to retain the picture, the truth of the matter was doubtful. At the Kew Observatory photographs of the sun had been regularly taken, principally by Mr. De la Rue and two other observers, and, from these observations, a vast insight into their nature has been obtained. The lecture was illustrated by photographs of the eclipse of 1860.

Cyanide of Potassium in the Nitrate Bath.—In another page a letter appears on this subject, written by Mr. P. O'Connor, in which he denounces the use of cyanide as an agent for rectifying the bath as dangerous and empirical. Since the use of cyanide for this purpose was first proposed in our own pages by Mr. Tully, some seven or eight years ago, its action has been much discussed. Two or three things are tolerably certain on the subject: first, that it does frequently restore a disordered bath to perfect working order; second, that it is an empirical remedy, the exact action of which is not well understood; and that, from the impure character of commercial cyanide, the photographer who introduces it into his bath gets a singular compound, the character of which it would not be easy at all times to determine. Mr. O'Connor's strong point is, that a bath treated with it soon breaks down again. This is a point upon which a photographer in large practice is in a better position to speak than an experimentalist or an amateur. In a second letter on the subject Mr. O'Connor says that when the remedy was first proposed he gave the matter full attention. He says:—"We collected from amateurs every foggy bath we could possibly catch hold of, and, aided by a clever photographic chemist, who was a photographer as well, we made various experiments, and did all justice to the cyanide cure, in order to discover its real effects on the bath. Five cures were pretty successfully made, and of sixteen more baths, after being equally treated, four were a little improved, but very unsatisfactorily; twelve other baths failed altogether. We then succeeded, shortly after, in making ten other trials. We boiled the cyanide in proof spirits, and crystallized it, but, in this case, six were improved, of which four worked well, but four failed totally; but we found in all cases that the cured baths soon got out of order again, and were then beyond all further remedy. I assure you that no person could be more anxious than I am to learn anything useful in the art, no matter from whom, but I am of opinion, from my own experience, that it would be better to avoid the cyanide cure."

Ownership of a Negative.—A rather curious question was tried in a law court in Paris the other day, respecting the proprietorship of a photographic negative. M. Yvon, the artist, exhibited, some few years since, a remarkable picture of the Battle of Solferino, in which a figure of the Emperor on horseback occupied the most conspicuous place. In order to make the resemblance of his Majesty as exact as possible, M. Yvon, with the permission of the Emperor, engaged MM. Bisson to proceed to the Tuileries, and there to produce for him, the artist, and under his directions, a portrait of the Emperor, from which he might finish his work. The portrait was very successful, and the proprietorship of the negative was the matter in dispute. MM. Bisson had since sold their business to M. Placet, who claimed the *cliche* as his property; but M. Yvon argued that he was the true proprietor, for MM. Bisson only in reality lent the use of their apparatus; he had ordered the portrait which he required, had superintended the pose, and it was to him that the negative should be delivered. The court took M. Yvon's view of the case, and ordered the *cliche* to be given up, but awarded M. Placet 300 francs by way of compensation.—*Journal of the Society of Arts.*

Plain Papers and Paper for Development.—We have recently received from Messrs. Bovey and Rivot some examples of prepared photographic papers, amongst which we find a very admirable plain paper, or, rather, a paper with something yielding a very fine and exceedingly smooth matt surface. Floated on an ordinary bath containing 40 grains to the ounce, and treated throughout as ordinary albuminized paper, it gives exceedingly good results. It is sensitive, prints of a good brown tint, tones to any colour required, and, with a moderately vigorous negative, yields very fine prints. The paper prepared for development is stated to be prepared with a new formula, in which neither bromide nor iodide, and but a little chloride, is used. It is floated on an ordinary bath, and exposed under a negative for about a minute to diffused light, until a trace of an image appears. It is then developed with a solution of pyro, and yields a very vigorous image of a rich brown colour, which in the finished picture is a deep purple brown, or black. We have rarely seen so good a colour in developed prints.

Colouring Zinc.—Zinc may be given a fine black colour by cleaning its surface with sand and dilute sulphuric acid, and then immersing it for an instant in a solution composed of 4 parts of sulphate of nickel and ammonia in 40 parts of water acidulated with 1 part of sulphuric acid, next washing and drying it. The black coating adheres firmly, and takes a bronze colour under the burnisher. Brass may be stained black with a liquid containing 2 parts arsenious acid, 4 of hydrochloric acid, 1 of sulphuric acid, and 8 of water.—*Chemical News.*

Utilizing Waste Products.—In a recent paper on this subject, read before the Society of Arts, Mr. Simmonds said:—"In the factories where albuminized photographic paper is made, a considerable quantity of paper is spoiled in the process, and it is then of but very little use. In Paris and Berlin this paper has always been washed as free as possible from the albumen, and then worked up into envelopes. Dr. Jacobson has found a new use for this paper. He proposes to stain it with aniline colours, and to employ it for labels, covers of boxes, and general decorative purposes. By being splashed with concentrated alcoholic solutions of the various aniline colours, the waste of these albuminized papers is now converted into marbled paper of a much more beautiful appearance than what is produced by the old process, from the green-gold lustre which the films of those substances possess. The papers obtained by this method retain the gloss, the bright 'satin' surface, of the albuminized material, and are almost as brilliant by transmitted as by reflected light. They are said to be well adapted for shades, trasparencies, paper lamps, and other means of decorative illumination." Dr. Jacobson has favoured us with some examples of this dyed albuminized paper with designs, labels, &c., printed in gold or other bronze, the result being very effective.

Tempering and Preserving Glue.—Dr. Vander Weyde, writing to the *Scientific American*, says:—"In addition to former remarks on this subject, I will state that a cement for leather, wood, &c.—at present sold from wagons in different large cities of the United States—consists simply of glue boiled in water, with the addition of very finely powdered white lead; this appears to produce a combination even superior to that made with Paris white, which I mentioned before. Glue is often found to crack in very dry localities, particularly when the objects glued together are not in close contact, but have a thin layer of glue between them; in which case they sometimes fall apart. Very thin layers of dry glue are not only exceedingly hard, but also more or less brittle. This brittleness they do not possess when not extremely dry, and, therefore, to prevent this dry and consequent brittle condition, the addition of a very small quantity of glycerin will accomplish the desired end, for the same reason that for many purposes glass-hard steel is less strong than soft-tempered steel. The quantity of glycerine must be modified according to circumstances. A liquid glue, far superior to any mucilage, may be made by dissolving glue in an equal quantity of strong hot vinegar, adding a fourth of alcohol and a little alum. This preparation will keep any length of time, when placed in closed bottles, and will glue together horn, wood, mother-of-pearl, &c.

Action of Water on Lead.—Professor Parkes, F.R.S., of Netley, calls attention to the fact that it has always been seen that the action or non-action of water on lead could not be entirely accounted for by the usual statements on the subject; and lately Dr. Frankland has made a curious observation, which may throw light on the subject. He found that water which acted on lead lost this power after passing through a filter of animal charcoal. He discovered this to be owing to a minute quantity of phosphate of lime passing into the water from the charcoal; on comparing two natural waters, that of the river Kent, which acts violently on lead, and that of the river Vyrnwy, which, though very soft, has no action on lead, he found that the latter water contained an appreciable amount of phosphate of lime, while none could be detected in the Kent water. This observation may probably explain much of the discrepancy of evidence in respect of the action of soft water on lead.

To Correspondents.

Latin Signatures.—A correspondent writes to us as follows:—"Allow me, through you, to offer the same advice to some of your correspondents that the Duke of Wellington is said to have given to one, when asked his advice about writing despatches: 'Never quote Latin.' What can have induced your otherwise sensible correspondent to sign himself 'Lux Graphicus'? Many of your readers are highly educated men, to whom such ignorance as this (when coupled with the pretence to learning that is thus assumed) is positively painful. I will not say that it dirties the publication in which it is allowed to appear, but still it cannot but raise a smile at human weakness. An ambitious correspondent in a morning paper, the other day, signed himself 'Sum homus Londanum.' This phrase, as well as 'Puella Formosus,' 'Fœmina Honestus,' 'Homo Proclara,' each and all of these phrases are as correct Latin, and not more so, than your pleasant correspondent's 'Lux Graphicus.'" It will be seen that we cannot with propriety interfere with the choice or formation of a *nom de plume* on the part of our correspondents, and although good latinity is desirable, proper names are not amenable to ordinary law.

Marion asks if any of the readers of the Photographic News can inform her if they know of any opening abroad for a first-class colourist. We should be glad to help Marion to the information she desires, but, on a little reflection, she will see that our business columns will aid her best in such a quest. She will occasionally find advertisements for first-class colourists to go abroad. There was one recently. Or, by advertising, her announcement may reach persons requiring colourists.

Thomas Stothard.—You will find a full description of Mr. Skaife's "Lucella Lamp" on p. 361 of the Photographic News, Vol. XI. It consists of a lamp for burning a powder, gives a very intensely actinic light, which, by giving an instantaneous flash of light, illuminates the object to be taken. The addition of carbonate of ammonia to sulphate of iron would not produce double sulphate of iron or its equivalent. To form the double sulphate, take 139 grains of protosulphate of iron and 66 grains of sulphate of ammonia; these, dissolved in water, will give you a solution of the double sulphate of iron and ammonia. If you take the two salts in these proportions, dissolve them in a small quantity of hot water, and then crystallize: you will obtain crystals of the double sulphate. When you add carbonate of ammonia to a solution of sulphate of iron, carbonate of iron and sulphate of ammonia are formed, and if acetic acid is present, it will convert the carbonate of iron into acetate of iron, which will give great intensity, but will probably render a longer exposure necessary. The occurrence of red nitrous fumes does not afford an indication of the entire solution of the silver.

W. J. A. G.—The subscription to the Photographic Society of London, or Parent Society, as it is often termed, is one guinea annually, and a guinea entrance fee. The subscription to the North and South London Societies is half a guinea each annually. There are no especial duties required of members. Their attendance at meetings is desirable, and, so far as they can, their contributions to the general interest, by the exhibition of specimens, the taking part in discussions, and contribution of papers; but none of these things are imperative. 2. The best means of recovering silver from washing is throwing it down as a chloride by means of hydrochloric acid; and when sufficient is accumulated, reduce it yourself, or send it to a refiner to reduce. 3. The electric light, although very intense, is not sufficiently steady for convenient use in enlargement. It is not so good for the magic lantern as the oxyhydrogen light.

W. F. (Lisnasken).—The size, proportions, &c., of your studio must very much depend on circumstances; but we may state generally that in building a glass room we should prefer to build it of a simple oblong form, with the ordinary ridge-roof; not less than 26 feet long by 12 or 14 feet wide; 14 feet high at the ridge and 9 feet high at the eaves. At each end a background with 5 or 6 feet overhead opaque, all the rest of the roof glass; at each end about 4 feet of each side opaque. In this we should have a very complete system of blinds, by which the light could be stopped out entirely from any part, and a second series of a thin material to admit a soft light. By these blinds, assisted by screens, our aim would be to keep all light out of the room, except such as was required to illuminate the sitter, and all light out of the camera, except that which was reflected from the objects intended to form the picture.

R. D. (Bournemouth).—You slightly misconceive the purpose of the medium in producing what are termed photo-mezzotints. The object is not to interpose a screen with a certain amount of opacity between the paper and negative, but to interpose a screen as perfectly transparent as possible, but of sufficient thickness to allow the rays, after passing through the negative, to become a little diffused before reaching the sensitive surface. Your plan, therefore, of making screens of different degrees of opacity would not quite meet the case. Thanks for your offer of suggestions. We shall have pleasure in receiving them.

H. S.—You do not state whether your unsatisfactory results were on paper or opal glass. It is very difficult to aid you when you state that you fail in working carefully with a process which, in our hands and those of others, has given perfect success. If your collodio-chloride had been properly prepared, it would not have answered on albuminized paper at all, because albuminized paper, being salted, would decompose all free nitrate of silver in the collodio-chloride, and would yield a comparatively insensitive surface of chloride of silver. The fact that you got the best results on albuminized paper suggests that you must have very considerable excess of free nitrate, in which case the addition of a little more of the chloride solution will probably help you.

Senrab Egroeg.—What is termed "blurring" in dry-plate negatives is an encroachment of the action of light upon the dark parts of a picture, and is chiefly seen when a very strongly lighted object is in immediate contact with a very dark object, as when a window is opposite the lens in taking a dark interior. It is chiefly present in plates, the sensitive coating of which is very transparent, and is caused by the light passing through the film and being reflected by the back of the plate. 2. All plates, as a rule, are better for development as soon after exposure as possible. Gum plates form an exception in permitting delay between exposure and development. The gum preservative should be fresh mixed. The developer will be better fresh made. The lens you mention is a very excellent one. It is impossible to state the time of exposure; so many things modify it, such as the strength of the light, the character of the subject, the size of stop, &c.

Ignorant.—We duly received your plates and letter, and answered your questions in the next issue of the News, namely, January 29th. We informed you that the marking caused by varnishing were chiefly due to the character of the collodion, which gave a film partially soluble in alcohol; when, therefore, an alcoholic varnish is applied, the film becomes partially dissolved, and hence the injury to the negative. The use of a fresh sample of collodion, or applying a weak solution of gum arabic to the negative after fixing and washing, is the remedy. From whom do you obtain your News? It is issued regularly from our office. If, therefore, your newsagent or bookseller supply you irregularly, the fault does not rest with our publisher.

Young Photo.—We have not tried the cabinet lens you name, but it is scarcely likely that it will be as quick as the other you mention. We cannot discuss the lenses of different makers by name in these pages. If you send a list with numbers to identify them we can indicate that most likely to suit your purpose.

J. M.—The only supposition upon which we can account for your failure with the golden syrup preservative is, its possible impurity. There should be nothing in golden syrup to cause a precipitate. Try another sample.

G. R. F.—The toning trouble you describe is still perplexing, and we can only account for it on the supposition that the sample of chloride of gold really did contain a good deal of free hydrochloric acid. Regarding the repeated use of the same solution for toning, we have no doubt whatever of its possibility. We continually do it, with the lime bath, the acetate bath, the Bovey bath, and the sulphocyanide bath. We have been engaged in some printing experiments this week, and have employed an old sulphocyanide bath which had been made before Christmas. It toned perfectly without any addition of gold. Thanks for the plain paper communication. It is very interesting.

T. Dodds.—We have devoted many articles in the News and Year-Book to the production of transparencies and enlarged negatives. In our Year-Book for 1868, page 73, you will find full instructions for producing transparencies. There is also a detailed article in the News, Vol. XI., page 547; in the Year-Book for 1865 you will find the subject of producing enlarged negatives fully treated. Both subjects would require too much space to permit of treatment in this column.

Fixtures.—The system of neutralizing the nitro-hydrochloric acid, instead of evaporating it, is often productive of trouble, as you get a large excess of nitrate of lime and chloride of calcium in solution. The green tint is probably due to copper in the gold. Try keeping the solution a few days before toning.

P. Ewing.—The letter was forwarded. The omission of the address was an accidental oversight.

W. T. Bovey.—Received. Thanks.

A. E. D.—A correspondent asks for the address of Mr. Joseph Wilson, a gentleman engaged in photographic colouring and copying paintings. Can any of our correspondents oblige him?

J. J. C.—We do not know of anyone who sells "leather collodion;" but we have found that any good tough collodion, with the requisite proportion of castor oil added, will serve. The opalescence of the film may generally be removed by warming it gently before a fire. We will write shortly.

Several Articles in type are again compelled to stand over.

Several Correspondents in our next.

Photographs Registered.

Messrs. Debenham and Son, Luton,
Photograph of Plait Hall.
Messrs. Galbraith and Co.,
Photographic Group Earl and Countess of Roden and the Misses Reilly.
Mr. C. Wyrall, Southampton,
Two Photographs of Rev. A. D. Cope.
Messrs. G. and J. Hall, Wakefield,
Photograph from Painting of Baron Hawke.
Mr. S. H. Fyfe, Glasgow,
Photograph of R.N. Yacht Club of Greenock
Mr. J. Bateman, Canterbury,
Photograph of the Skull of Sir Thomas Moore.
Messrs. M. and M. Barat, Banbury,
Photograph of Painting entitled "Banbury Cross Festival in Olden Times."
Mr. T. E. Hawker, Lostwithiel,
Two Photographs of N. Kendall, Esq.
Mr. E. Parkinson, Mould,
Photograph of Rev. John Davies.
Mr. J. Collings, Cardiff,
Photograph of Drill Hall, Cardiff, with Preparations for Banquet to H. S. Giffard, Q.C.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 547.—*February* 26, 1869.

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A PHOTOGRAPHERS' RELIEF FUND.

Just four months of the six have elapsed within which a committee for working a Photographic Relief Fund must be formed in order to claim the £50 munificently offered by "Gum Gallic Amateur." We invited, at that time, communications from photographers interested in the matter, stating what sum they would be willing to contribute to such a fund if formed; and the promises we have received hitherto amount to a little over £50 more. If the organization be formed, we should like to see it commence, however, with a nucleus of not less than £200, and a prospect of maintaining a fund by means of annual subscriptions. The question arises, then, Shall the necessary fund be raised, and that within two months? The answer rests solely with photographers.

From the correspondence published in our pages a short time ago, it was tolerably clear that no very certain or definite idea prevailed as to what should be the character and aims of such an organization. Some were disposed to advocate the formation of a Provident Fund, from which the members, having paid the necessary regular subscriptions, could demand, under certain conditions of need, relief according to a scale properly calculated by an actuary. Such a fund would, we fear, be troublesome to organize, and almost impossible to maintain in a solvent condition. In a Friendly or Provident Society the existence of a very large number of members is a necessary condition of successful working, in order to bring into operation the law of averages upon which the operation of such societies is based. The total number of persons engaged in photography would not, we fear, be sufficient for the satisfactory maintenence of such a society. The necessity for such a society, moreover, scarcely exists, inasmuch as various organizations of the kind, unconnected with any especial profession or business, exist for those inclined to avail themselves of the opportunity of such prudential provision for a time of need. It must be obvious, we think, on a very little examination of the case, that the formation of a Provident Fund of a self-supporting character is neither possible nor desirable.

In contemplating the formation of a Benevolent or Relief Fund, some difference of opinion prevailed amongst our correspondents as to the proper recipients of its bounty. A very little reflection here will, we think, render it clear that the administration of a relief fund should not be characterized by a narrow or restrictive policy. The fund once in existence, its aid should be extended to any necessitous person with sufficient connection with photography to come within the pale of its especial sympathy; the imminence of the need, and the extent of the funds, alone governing the administration of relief in every instance. The exact extent to which the suffering applicant had been connected with photography would not, we imagine, be considered at all in his time of need. The fact that, besides practising photography, he had occasionally played a part in a pantomine, painted scenery, taught writing, or even cut corns or dressed hair, would rather prove that he had been willing to make an honest living, and was therefore a legitimate claimant for relief in his necessity, than that he was disqualified because he was not a photographer *pur et simple.*

The organization necessary for administering a Benevolent Fund appears to us to be very simple. A committee should be formed with a treasurer and secretary. Perhaps it would be well that donors of, say, £10 and upwards should be life governors. The committee would meet at stated times, to consider claims for relief placed before them. As it would be difficult for a committee to possess or obtain a personal knowledge of the nature and extent of the claims presented, it should be a *sine qua non* that the claims should be substantiated by means of trustworthy testimonials and vouchers, and the greater the number of such testimonials or recommendations, signed by contributors to the fund, the more certain would become the claim of the applicant. The validity and extent of the claims having been duly decided, the relief would, of course, be proportioned to the means in hand, an order on the treasurer, with due regard to the state of the fund, being in each case made by the committee. The numerous cases of severe privation and bitter necessity, either of a temporary or a permanent nature, which continually come under the attention of photographers might be relieved by such an organization without resorting to the doubtful and inconvenient course of making special appeals in the journals; and it seems to us that as, by such a plan as we have suggested, a fund might, without much difficulty, be administered, there will not be serious effort required to raise and maintain an amount sufficient to meet the purposes for which it is required.

It will be seen, from a paragraph in our Foreign Miscellanea, that in Vienna a ball has just been held in aid of a similar fund. Our immediate resources must be obtained by subscription, and we again remind our readers of the importance of sending us some intimation of their willingness to contribute, so that a legitimate inducement to the formation of a committee may be found in the probability of a respectable fund being at once formed, of which they will be required to take charge.

TRANSFERRING SILVER IMAGES.

M. Grune, of Berlin, has recently utilized the possibility of transferring a silver image by applying the result to various purposes. In speaking of transferring the image, it should here be understood that we refer to the image itself, con sisting of metallic particles, and not to the collodion or other film which supports it. Dr. Vogel says that Grune has observed that the silver picture lies on the collodion film, not in it, and he illustrated the fact before the Berlin Society by rubbing the picture off the film with his finger moistened in oil, leaving the collodion film perfect and intact. This is true, we apprehend, rather of images formed on a horny film than in the cases where a spongy or porous collodion is employed. In the latter case it is probable that the image is to some extent embedded in the texture of the film. In many cases it is quite certain, however, that the image rests on the film entirely. Some examples of enlargement on collodion transferred to paper, recently sent us, well illustrated this fact. The horny film of collodion which had been employed had cracked away in parts, leaving, attached to the paper, a fine, dead black image, of a slightly pulverulent character. Had the collodion been carefully and evenly removed from the whole, the matt image left on this would, in our estimation, have had a finer and more artistic effect than it had with its collodion covering intact.

M. Grune utilizes this property in collodion images in various manners. He recently showed us a wood block, to the surface of which an image had been transferred, giving a drawing ready for the engraver without the drawback of having to cut through a film of any kind, which is apt to chip or tear away when a graver is applied, and so destroy part of the image.

M. Grune, who is in this country for the purpose of disposing of some of his photographic inventions, showed us several interesting examples of the effects produced by his mode of transferring the photographic image from silver to other metals by deposition or substitution. The images, which consisted of transparencies on glass, were of various colours—grey, black, purple, brown, and red. These colours are produced by what may be termed toning the silver image with salts of gold, platinum, uranium, manganese, &c. In some cases the toning is simply used to give a more pleasing colour to the transparency, in others it is the preliminary operation to firing, for the purpose of producing enamel photographs. There is an interesting field for experiment in this direction which, as yet, is comparatively unexplored.

Dr. Vogel, recently writing to our Philadelphia contemporary, gives Grune's formula, working in this direction. For giving a fine brown colour to collodion transparencies, M. Grune takes, he says, the mixture proposed by Selle, of salts of uranium and ferrocyanide of potassium (red prussiate of potassium). Selle proposed this mixture for intensifying, and it is very well adapted to this purpose. Take—

Nitrate of uranium	1 gramme
Water (filtered)...	100 grammes
Red prussiate of potassium ...	1 gramme
Water (filtered)...	100 grammes

and mix the two after filtration.

"It is best to place the positive or negative into this fluid, moving the dish backward and forward; this will make the colour more uniform. The pictures tone, in this solution, a beautiful brown. When a darker or blackish brown is desired, Grune recommends a previous immersion in a solution of platina; washing, and, afterwards, the application of the solution of uranium and prussiate of potassium. Platina, alone, tones black, and this, with the brown of the uranium, causes an intermediate tint."

DR. BORLINETTO'S DRY PROCESS.

In Dr. Borlinetto's "General Treatise of Photography," which has recently been published, the author thus describes a method of preparing dry plates which he has used for some time with very satisfactory results. He says:—

"I employ a collodion similar to that indicated by Hardwich, prepared with iodide of potassium, ammonium, and cadmium, to which bromide is added. I sensitize in a twelve per cent silver bath, and then wash the plate, first with filtered rain-water, then with ordinary water, and afterwards again with rain-water. I then plunge the sensitized plate into a decoction of Levant galls, prepared, a few days previously to its employment, by macerating 20 grammes of galls in a litre of warm water, the liquid being afterwards passed through a filter. The plate remains in this preparation for a period of three minutes, and is then withdrawn, drained by means of blotting-paper, and placed in a box. If necessary, its desiccation may be accelerated by exposure to warmth, in case of the plate being required for immediate use. When perfectly dry, plates prepared in this manner will keep in good condition for months.

"After exposure, which lasts about three times as long as that of wet plates, I place the film in distilled water for two minutes, and then put it upon a stand, constructed on purpose, and pour over it a solution compounded in the following proportions:—

Distilled water	400 grammes
Acetic acid	20 „
Pyrogallic acid	1 gramme
Gallic acid	0·25 grammes

I allow the solution to remain upon the plate for half a minute, and then pour it back into a small vessel in which a few drops of nitrate of silver solution have previously been placed; the whole is then again poured upon the plate. The image becomes at once apparent, and at the end of about five minutes the negative is perfect.

"In case the negative does not come out satisfactory, the developer is renewed. By this process I am able to produce skies impermeable to light, and it is unnecessary, therefore, to blacken the ground of the negative, a precaution requisite in many other processes.

"I shall be very glad to see this process adopted by photographers, as I am quite convinced of its excellence."

Foreign Miscellanea.

The question as to whom the negative belongs when a photographer undertakes the execution of an order has taken a very serious turn both in France and in Germany. In Paris a M. Yvon, an artist, brings an action against the firm of MM. Bisson Frères—or, rather, their successors—for the recovery of a negative taken in obtaining a photograph of the Emperor. MM. Bisson delivered the pictures in the usual way, but M. Yvon subsequently claimed the negative likewise, and the tribunal before which the matter was tried decided that the claimant had a perfect right to the plate, although it awarded the sum of 300 francs to the defendants, as representing, it is presumed, the value of the negative. In Germany a case of a similar kind has recently been argued, and with a like result. A Prussian photographer, M. B——, received an order to photograph a country chateau. He proceeded with his apparatus to execute the demand, but, during his journey to the scene of operation, the weather, unfortunately, changed for the worse, and a very mediocre result was the consequence. His client pressed for the supply of the pictures, but, on their arrival, without taking into consideration the circumstances under which they were produced, at once rejected them, and demanded to be supplied with the negative taken. The photographer hereupon forwarded his account (a very modest one, although his instruments had suffered considerable damage from the weather), but, as a matter of course, did not comply with his customer's demand for the negative. The owner of the villa refused to pay the amount, and M. B—— accordingly brought an action, in which the defendant, among other pleas, stated that, inasmuch as the negative, which was his property, had not been delivered, he did not feel himself bound to pay. The court decided in favour of the defendant, and condemned the photographer in the costs. The latter then appealed against the decision, and obtained a favourable verdict, by which he was to receive the sum of nine shillings for his labours. On this his opponent brings a further action to recover the negative, and the court decided that the photographer must deliver up the plate or pay the plaintiff the amount of nine shillings, and likewise one-third of the costs of the action.

The *Moniteur de la Photographie* contains a long letter from M. Clement, relative to the remarks recently made by M. Meynier, at the Photographic Society of Marseilles, with reference to the actual commercial value of the *Sel Clement*. The writer states positively that his preparation does not contain as much even as 10 per cent. of magnesia, but admits that, out of 1,000 grains of the salt, there are as many as 620 grains of different substances not more costly than magnesia. Taking into account the cost of preparation and manufacture, M. Clement contends that the price he charges is very far from being exorbitant.

The pictures offered by the French Photographic Society for distribution, in a manner similar to our Art Union drawings, are a very valuable and interesting collection. There are five series of prizes; viz., two valued at 500 francs, five at 100, twenty at 50, fifty at 20, and one hundred at 10 francs. The pictures include an example of heliochromie upon a silver plate by Niepce, a photograph on paper in natural colours by Poitevin, porcelain pictures by Lafon de Camarsac, carbon prints upon glass by Soulier, encaustic pictures on glass by Tessie and Marechal, and likewise productions of Leon Levy, Bingham, Constant, Scott Archer, Talbot, Davanne, Negre, Fargier, Swan, Braun, Despaquis, &c. The issue of tickets is not confined to members of the Society, but may be purchased by anybody desirous of doing so.

MM. Goupil and Co. have just completed their establishment in Paris for working the Woodburytype process, and are now prepared to undertake printing by this method to any extent. They intend to take prints from the whole series of negatives in their possession by means of this relief process.

The *Cabinet-format* has become a favourite style in Germany. A very numerous series of photographs have recently been taken of ancient and modern sculpture in Rome, Florence, Berlin, Paris, &c.; the whole series are photographed cabinet size, and are advertised at the moderate cost of ninepence each.

A French journal, *La Liberté*, has an interesting article on photo-engraving, a process which is rapidly becoming popularized. As an instance of the state of perfection at which this method has arrived, it is stated that one firm—MM. Drivet and Co.—is enabled to produce an engraving upon copper-plate of a carte-de-visite photograph for the sum of fifty francs, and, moreover, in a very accurate and rapid manner.

In reference to the *Sel Encausse*, which was brought forward some time since as a toning salt of excellence and economy, M. Davanne has made a statement pointing out that it is not a gold salt. At the last meeting M. Encausse appeared for the purpose of defending his "Sel," and the consequence was a very animated discussion among the members. M. Davanne, however, was able to support his statement by a certificate from the Imperial Mint, setting forth that the *Sel Encausse* contained gold to the extent only of one-tenth of its weight.

The *Photographische Mittheilungen* publishes a list of foreign members of the German Photographic Associations, amounting in all to a total of nearly two hundred.

A brilliant ball was given on the 27th ult., by the ladies of the chief photographers in Vienna, in aid of a benevolent fund for the widows and families of deceased photographers. The assembly was a great success, and fulfilled the object of the promoters in a very satisfactory manner. The invitations included not only the members of the Vienna Photographic Society, but were extended to many friends and well-wishers of the art.

In the *Photographische Correspondenz* Dr. Hornig continues his interesting lectures on photography and photographic chemistry. The objects of researches undertaken at the present time in connection with the art Dr. Hornig classes under three headings:—1, To obtain plates for the production of negatives which shall remain sensitive for a considerable period after their preparation (dry plates); 2, to reproduce natural colours in the camera (heliochromie); 3, to multiply the photographic image by processes capable of yielding a large number of copies endowed with absolute permanence. After discussing these points, Dr. Hornig proceeds to detail the methods of preparing the different requisites in the process; as, for instance, collodion, alcohol, ether, &c. The manner of producing each of these materials, and the qualities which they should possess, are described at some length.

In the same journal M. Adolph von Gotz, an Austrian Royal Academician, gives an exhaustive account of the best methods of colouring albuminized prints, and describes those pigments which are most suitable for the purpose.

Dr. Julius Stinde, the president of the Hamburg Photographic Society, has published in the *Archiv* two very excellent articles entitled Souvenirs of the Hamburg Exhibition.

At a meeting of the Berlin Society, held on the 8th ult., a discussion took place upon M. Husnik's photo-printing process. It was stated that the printing could not be effected by this method in an ordinary printing press, from the fact of the relief being very slight, but that a lithographic press was necessary, on account of the high pressure required. A letter was read from M. Husnik, in which he stated he was willing to part with the process for 6,000 florins, and promised to exhibit the method to anyone desirous of seeing the same, provided the spectator would remain at a distance of six feet from his work-table.

The *Zeitschrift der allgem. osterr. Apoth. Ver* contains a note by Dr. Muller on the preparation of chloride of gold, in which he recommends that, inasmuch as the salt exhibits a strong tendency to dissolve and run, it should be heated to such a degree that on cooling it forms a dark red crystalline mass. If, instead of heating the solution to this degree, it is cooled and decanted, there remains behind a mass of most brilliant colours, composed of a network of prisms plainly visible to the naked eye. The salt obtained in this manner is of a less hygroscopic character than the ordinary chloride of gold.

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SOMETHING OF INTEREST TO EVERY ENGLISH PHOTOGRAPHER.

BY DAVID DUNCAN.

A strange title, as though the "something" was not interesting to any but English photographers. To explain, this communication is from "the other side," and, from my experience in England, I think it cannot fail to interest its devotees of the photographic art; but I invite the attention of every photographer who is unacquainted with or does not practise that which I am about to set forth in this paper. A bold title, perhaps, yet I will let it remain; it will stimulate me, and urge me to do my best to substantiate it. It will remind me to be careful in putting forth the claims of the "something." It is not photography in natural colours I have to tell of; I wish it was; but it is of something much needed—something as great in importance as an artistic lesson or an excellent formula for making good, successful negatives specially—something of primary importance to every photographic manipulation. Let it be printed in large type:—

How to Clean Plates.

Do not let the expression of your face droop, courteous reader, nor your eyes wander over the page. True, you learned to clean plates years ago, when a boy, perhaps; it was your first photographic success; it was your last. Posing, lighting, and chemical manipulation you have mastered, to a certain extent, some time ago; they give you not so much anxiety now as the cleanliness of the plate; you have long since ceased to clean them yourself, yet the difficulty attending the thorough cleaning of the plate haunts you still, or why that brushing with the camel-hair brush, breathing, and brushing again, ere you coat it with collodion? Yes, sir. It was your last success when you held, exulting, with dripping fingers, that clean, bright negative between your gaze and the light. Oh, the importance of a photographically-clean plate! Some have given up photography in despair—some, in the early days of the art, have been ruined—from want of obtaining uniformly clean negatives, arising from dirty plates. Of the importance of a clean plate to the photographic manipulator at the present advanced stage of the art it may seem idle to speak; we meet, wherever we go, no matter how bad the picture, with clean work; it is not acknowledged by photographers, and the public will not tolerate it, but there are secrets in the prison house. With what difficulty is clean work obtained! What "dodges" are often resorted to, in printing, to hide dirty negatives! How often a view is taken over again after the best light has flitted from the scene, or a sharp copy, or an excellent portrait, with charming expression, thrown into the sink, on account of a mark or a stain! There can be nothing more vexatious or disheartening to the artist than, after concentrating all his faculties on composition and pose, to find his production marred by a stain or dirty streak on the plate, while knowing his chemicals to be in excellent condition. Photographers have long borne with such a difficulty, and still bear with it; they look at it as one of the necessary evils in the profession; therefore something which will remove—or, at least, alleviate—the evil cannot fail to be interesting.

A photographic negative is not an absolute loss and failure, though partially disfigured with streaks and stains, which can be masked out in printing. Still, little can be said in defence of such a negative. It is not perfect photography. It has been said that the beautifully artistic pictures of a certain English photographer are printed from negatives anything but clean, and the finished productions have betrayed the fact; but, whenever they do so, the defective manipulation did not enhance their value or beauty, to say nothing of the increased trouble in printing from such negatives. The pictures by the gentleman alluded to are highly praised; he is a "photographic artist" in the truest sense; it is not from want of knowledge or experience that some of his negatives are somewhat defective; no doubt his sensitized plates suffer whilst his attention is absorbed in the arrangement of his picture. No man can be truly great in every point. However, often his plates may not be photographically clean.

Speaking apart from the plate, little can be said by way of apology for dirty negatives, beyond the fact of seldom seeing produced, as a rule, clean ones, with artistic delicacy and "roundness" combined. To explain, there are two classes of photographers: one aims at clean work, no matter how badly the figure is posed, or inappropriate the view; so long as a negative is clean and sharp, it is considered good. A man belonging to that class works very hard; plate after plate which would have made, despite the streaks or stains, tolerably good pictures, are cast aside; expression, pose, lighting, exposure, all are lost sight of, overruled, or forgotten, in his efforts to obtain a sharp, clean negative. Nothing short of sharpness and cleanliness will please him. The other class aims at artistic photographic pictures; *i.e.*, delicate half-tones with "roundness," or stereoscopic effect, combined; ease and naturalness of pose, expression, &c They do not reject a negative with a few marks, which, perhaps, can be "masked out" in printing, so long as it is a characteristic portrait, or a picture as consistent with the rules of art as photography will allow. The productions of these men are, by the public and photographers generally, considered the best. They are altogether the most successful artists in every sense. Nevertheless, we must admit, it is laudable to aim at clean work.

As it is not my purpose in this paper to explain the causes of streaks and stains arising from the chemical condition of the sensitized plate, or the want of skill in manipulation, &c. (for it is well known and discussed amongst devoted photographers), I must pass on to say a word or two on the present method of cleaning plates. The method generally adopted—viz., by cloths, leathers, &c.—is, according to theory, the safest and best, but in practice it is not so. The work is frequently entrusted to boys, and, when it is not, there is uncertainty attending the *modus operandi; e.g.*, some operators, in cleaning plates fresh from the stock-dealer, use pure alcohol with tripoli powder or rouge; yet, despite every precaution, a little of the powder does at times adhere round the edges, which gets loosened in the bath. Some use methylated spirit instead of alcohol. Now, all the rubbing in the world never thoroughly removes all traces of naphtha with which the "spirit" is frequently adulterated, and which is not a valuable addition to a sensitive iodized silver solution. Some use rotten-stone, not knowing that many commercial samples contain a good percentage of greasy, earthy matter; therefore, plates cleaned with such a sample are worse, photographically speaking, than they were before. Some use cloth for polishing, some chamois leather. The hand of one operator is dry, and does not to any extent interfere with the cleanliness of the cloths or leathers he handles; another's is damp or moist, and he rubs the plate in vain; another oils his hair freely, and, by a strange coincidence, finds his cloths and leathers frequently greasy, and, at times, a trace of the "perfumed hair oil" on the plate, which he cannot, under the circumstances, avoid. I am not exaggerating. Thus the difficulties attending the mode of plate-cleaning generally practised will be readily seen. I must not lose sight of this fact, that, in many instances—I do not say all—in commercial photography, plates are cleaned only when required, a practice not to be commended, for many points with regard to thorough cleanliness, in the haste, are overlooked. Finally, how very difficult it is to work successfully old plates—plates which have been used before—useless negatives washed off! Reform is certainly needed in this department. Some American photographers—just like them!—have long seen the desirableness of this, and have adopted a different method of preparing plates for use, as their work proves, with great success. "What do they do?" They albuminize their plates; a process certainly well known and anything but new in photography, but decidedly novel in its application in the wet process of ordinary commercial portraiture, and decidedly unknown, in consequence, to hundreds of photographers. A most successful formula is—

Albumen	1 ounce
Water	20 ounces
Liquor ammonia	8 drops,

well mixed. One side of a plate is coated only, as the film of albumen upon the plate is so very thin the bath does not soon become affected, even when plates are coated the non-albuminized side by mistake; but, as a matter of course, care is taken to keep plates in a box or in such a position upon the shelf that the right side is easily known—a very simple matter. The above formula will coat a very large quantity of plates, and they will keep a considerable time working clean plates which cannot be thoroughly cleansed by polishing with cloths, and will work clean when coated with the above; thus a saving is effected by being enabled to use up old negatives. An old bath will contain a trace of albumen if many plates thus coated have been dipped therein, but boiling down to dryness removes it.

My method of preparing plates is, first to soak for one night, at least, all dirty plates, whether new or old, in a strong solution of caustic potash or a saturated solution of common soda (old varnished negatives longer if they require it); then clean off the dirty films, &c., and rinse in clean water. If the plates have been albuminized before, I further place them in a strong solution of sulphuric acid and water, and leave for another night, to thoroughly remove any impurity which may remain; but those which have not been used before, and which have not been albuminized after coming from the potash or soda solution, I rinse well under a tap, holding the plates by one corner as each one is rinsed. I coat with the albumen solution, filtered through ordinary filtering-paper into a clean glass measure, by pouring on like collodion, carefully keeping the solution from getting on the other side of the plate.

I generally coat a plate twice. The first coating I drain off over the sink, as it would weaken the solution of albumen, being mixed with the water on the plate, if allowed to go back into the measure. As the plates are coated they are placed in a rack to dry. The whole operation, with a little practice, is speedily performed. Care must be taken to avoid dust. I can say, from experience, that the process is a very successful one, and invaluable for "wet plate" out-door photography. I have dwelt at length upon this subject, because I deem it a very important one—one not to be despised by the first photographer in existence. The subject is interesting, as an improvement may yet be suggested; albeit even now I feel I am offering something of inestimable value and service.

A SIMPLE METHOD OF USING CARBONATE OF SILVER PAPER.

BY GEORGE HUTCHISON.

Having tested this new printing process, and being fully persuaded that it will ere long take the place of the silver printing process now in use, I think a few words may not come amiss to some of my brother amateurs, who have not hitherto had time to conduct their own printing, and who have not tried this.

My manner of working is as follows:—I take a common deal box, with a lid that fits pretty tightly, in order that the fumes of the ammonia may not escape, and place in this box the carbonate of silver paper—cut to the proper size—along with a pad made of felt, or of some other material, so that it is of a porous nature, for placing at the back of the paper during printing; then add a bottle of liquid ammonia and another of carbonate of ammonia; take out the stoppers, and close the lid of the box. In a very short time the paper and pad will be sufficiently saturated with the fumes of the ammonia, when they may be put in the printing-frame.

This paper, when prepared thus, is quite as sensitive as ordinary sensitized paper. Having printed to the proper depth, wash in a single water, then proceed to tone and fix as usual. I have used the acetate of soda toning bath with great success, but I find it an evident improvement to raise the temperature of the toning bath to 100° or 120°, and by this means I get rich black tones.

The advantages to be gained by this process are, that the paper may be kept in readiness for use at any time, and that, after printing, the toning may be postponed to suit the convenience of the operator, and, after having been kept for weeks between the printing and toning, the whites will be as pure as when first put into the printing-frame. These advantages alone ought to recommend it to the attention of the amateur, the latter more particularly.

What is wanted now is, that various kinds of paper should be introduced to suit different negatives and different classes of pictures; also that the price should be reduced, so that this process may be worked at or near that of the ordinary one.

These faults will doubtless soon remedy themselves when this paper becomes better known and more extensively used.

[The examples which Mr. Hutchison has forwarded are exceedingly brilliant, possessing very pure whites, and rich, intense blacks.—Ed.]

A FEW PLAIN REMARKS CONCERNING PLAIN SALTED AND ALBUMINIZED PAPERS.

BY W. T. BOVEY.

In the case of plain salted paper *versus* albumen and all other kinds of glazed surfaces, artistic feeling and refined taste appear in behalf of the plaintiff, whilst the defendant is obstinately defended by nine-tenths of photographic, and within a fraction of ten-tenths of general public, opinion. Against such formidable odds it were folly to anticipate a verdict in favour of the plaintiff. It must therefore be content to 'bide its time, and, at a more convenient season, it might (probably it will) move for a new trial, and perchance prove the victor.

Touching, for a brief instant, on the question at issue, it seems to me that the pith of the matter under discussion might be fitted as a kernal to the proverbial nut-shell. Pictures in extreme miniature must needs be produced on a highly glazed surface, otherwise they are robbed of half their delicacy and all their beauty. On the other hand, pictures of large dimensions are unquestionably vulgarized when impressed on a glazed ground. Would it not, therefore, be wise and prudent if the contending claimants would each recognize its legitimate sphere, and, by giving to each its best-fitting work, thus settle the difference now and for ever?

Had I commenced writing this article with a view of upholding the claims of both or either of the disputants, I should have been tempted to enlarge copiously on the remarks last offered; but my chief object is to offer a few comments on the matter contained in an article from the pen of M. Constant, which appeared in a recent number of the News, in which the writer appears to have pinned his faith on erroneous premises. I must, however, do M. Constant justice by stating that his opinions are tendered free from bias or dogmatism. He simply gives expression to his ideas, and asks correction if proof can be given that he is in the wrong. That he is in error I shall endeavour to show, not with the most distant approach to feelings of hostility, but simply with a view of eliciting truth. The principle advanced to which I take exception is explained in the following extracts, which I take the liberty of quoting from the article before alluded to, which may be found in page 65 of the News for the present year.

After a brief description of his experience with albuminized paper, sensitized and printed on the reversed side, M. Constant proceeds to observe: "*Ought we not to conclude from this result that the salted film, which is supposed* to produce an even, impermeable surface, *preserving* the image upon the exterior of the paper, scarcely fulfils the object for which it is destined? for, owing to the structure of the paper, and perhaps, also, owing to the faculty of the albumen, the latter invades the interior of the paper, and causes therein the formation of the image." To this last theory I offer a decided objection. The albumen does indeed invade the interior of the paper, but, save under special conditions, the image *never* penetrates beyond the extreme outer surface of the albumen coating.

The results which follow the experiments with gelatinous substance arise from the fact of such substances being but sparingly acted on by silver solutions when such solutions are superficially applied.

But to return to the new theory just pointed out. I now proceed to deal with it in as practical a manner as possible; and to effect this object I take a sheet of albuminized paper, which, as is well known, consists of a sheet of plain paper coated one side with a layer of albumen which has penetrated and is held secure by the texture of the paper. Let us now, in imagination, separate the sheet into two halves, then lay aside one portion for the present; the other we proceed to sensitize in the ordinary way; and what follows? Why, the silver speedily penetrates throughout the whole thickness of the albumen. Otherwise, oh, for blisters abominable! Presuming, however, that our paper is coated with fresh albumen, the silver unites chemically, and thus renders insoluble the whole. Our paper being dried, we place a portion under a negative, and expose it to the sunlight, when it immediately commences to darken; not, remember, throughout the thickness of the albumen, but on the extreme surface only, which, being most exposed to the light of the sun, is rapidly acted upon, and the dark veil so produced forms an effectual barrier against the admission of light beneath.

Before I proceed further, however, I would just observe, that although this last remark might be accepted as a general rule, exceptions may, at will, be produced—exceptions which I purpose explaining in a paper I intend to produce, at an early period, on Salomon prints, and how to make them. At present, I return from my digression, to continue the thread of the topic now before us.

It will be readily perceived that if the darkening of the surface of the albumen prevent reduction beneath, M. Constant is clearly wrong in his views when he assumes "*that if plain paper yields more permanent prints than albuminized*" paper, it is because the film upon the plain material compels the formation of the picture more upon the surface, and does not allow the image to sink into the body of the paper, as is the case when the penetrative albumen compound is employed." The statement here made is at a decided variance with the facts of the case, except, indeed, we interpret by a reversed rule; for our every day experience has taught us to perceive that the penetrable force exerted by the light is in a due proportion with the glaze formed by the albumen. Its brilliancy is therefore the test of the permeability or impermeability of a sensitive surface to the action of the luminous rays.

Proceeding with an illustrative experiment, let us reverse sides with our relay of sensitive paper, placing the albumen surface next the padding of the frames. What follows on exposure to light? Insensitiveness, of course; and ultimately a ghost-like image, of slaty hue when viewed by reflected light, but on holding the paper up between the eye and heaven, an image full of vigour almost magically presents itself. Why this metamorphosis? Because there are two sides to the albumen, and the picture, having been printed on the wrong one, is concealed by a granular veil, which intervenes between the inner albumen surface and the outer back surface of the paper. The picture thus presented to us is formed chiefly of albuminate of silver, and, in consequence of the light having been weakened by filtration, together with the existence of free nitrate on the outer surface of the albumen, causes the image to penetrate sometimes through the whole thickness of the albumen; but that depends chiefly on the time of floating. A paper floated five minutes does not yield so strong an image as one floated ten minutes, and it must be perceived that the back surface, being void of smoothness—granular, one might describe it—opens up facilities for the admission of light which the opposite surface does not possess. Adopting my remarks as correct, I see no reason why a picture formed on the back surface of the albumen should be more permanent than one produced in the regular way, except we admit it as probable that the encloistered image is protected from atmospheric taint by the veil which conceals it from reflected light. This possibility I would not attempt to dispute.

Turn we now to the unsensitized half of the sheet which was set aside. We proceed to sensitize, not on the front, but the back of the paper. The printing, on subsequent exposure, proceeds more rapidly than before, and the picture is formed on the back surface of the albumen, but under different conditions, for not only has it all the free nitrate to aid it, but the paper is also saturated with the sensitive salt, and the results turn up a very passable picture A faint image on the front surface proves in this experiment also that light is more penetrative when acting on the back than when it is brought to bear on the front albumen surface.*

Much more might be said on the subject, but time and space press adversely. I would, therefore, by way of conclusion, add a word of enquiry. If plain paper printing is by some considered advantageous, why have recourse to dodges? Why not employ unglazed papers prepared expressly for printing purposes, and which must certainly retain an image more superficially than an albuminized paper printed by the rules of contrary? Any paper albuminizer does, or should, know how to prepare a paper which needs no "cooking process," whilst the cost of the superior article would be less.

Concerning the question of permanency, I must here, perforce, withhold remark, and proceed to dip my pen into the ink to write me down—Finis.

HINTS ON RECOVERING SILVER AND GOLD FROM RESIDUES.

BY J. MARTIN.

In this dull season of the year, when business is slack, the careful photographer will embrace the opportunity of balancing his books, overhauling his stock and apparatus, making improvements and repairs, collecting his debts, planning novelties for the forthcoming season, and getting rid of refuse; part of this latter will be his residues, which he will either send to the refiner, or reduce himself. I have little new to tell concerning these matters, but, as I had to try various methods at some expense and inconvenience before I found one sufficiently simple and easy of execution, perhaps a description of my arrangements, deduced from experience, may prove of service, at any rate, to beginners.

My printing-room is a part of my dwelling-house, and is fitted up with shelves, work-table, non-actinic blind to window (sliding back or forward as white or yellow light is required), a water-supply and sink, having a pure tin pipe (such as publicans use to their beer-engines) leading into a cask which receives all washings, and is emptied from time to time as occasion may require; there are also a wooden pail, a tall glass vase, and a glass jar such as confectioners use. I proceed as follows:—

A small quantity of common salt is thrown into the pail, and the washing waters of prints are poured into it (and these only) time after time until it is nearly full; then these are tested with a little more salt, some muriatic acid added, well stirred up, and, after the chloride of silver has deposited, the supernatant water is poured into the cask, and the chloride stored in the glass jar. The washings from measures, dishes, &c., drain into the cask, and thus, in this also, there is, in time, a considerable precipitate collected; but this, being from various sources, is never mixed with the pure chloride, as this can be reduced to a metallic state by an easier method than the other. Into the glass vase are poured the old gold baths and hypo solutions, to which I add a little sulphuric acid and some strong solution of sulphate of iron; when nearly full, these are also tested with more iron solution, stirred up, left to settle, and the supernatant liquid poured off into the cask as before. My studio is built in my garden, and along one side of my dark room runs a sink, having a pipe similar to the one before mentioned, which leads into a very large cask—originally a sugar hogshead—having a cover, and standing outside the studio. Into this all drainage runs, and, as it contains cyanides and various other compounds of silver, I use sulphuret of potassium to decompose and precipitate them. In a half-gallon bottle of water I dissolve 1 pound of sulphuret, and pour 1 pint of this solution into the cask; half way down it there is a plug, and from time to time, as the cask fills with drainage, this is first tested with more sulphuret solution, well stirred, left to settle, then the plug withdrawn and the water so far let off. Once a year the whole of the water is drawn off from another plug placed near the bottom, the black muddy-looking residue removed to a pan to subside, dried over the fire in an iron crock (such as cottagers use for cooking), packed in paper, and labelled. This iron pot serves also to contain the paper scraps and filters, and, whilst being burnt to ashes, these always contain a very considerable amount of silver. I have obtained as much as 9 ounces from 1 pound of ashes. Thus far everything is easy, and only requires a little method to prove the source of a valuable saving to either the amateur or professional photographer.

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* A further proof of this is given when a picture printed on the right side of the paper and one printed on the wrong side are comparatively viewed by transmitted light.

But now comes the question, Is the reduction of these residues, and their reconversion into nitrate of silver and chloride of gold, to be attempted? Should there be no knowledge of chemistry, and the conveniences limited to a dwelling-house and studio, perhaps nicely furnished, I should certainly give the same advice as that of Mr. Punch to those about to marry: "Don't!" By far the better plan in such cases will be to take a fair sample from each of the different descriptions of residues (a very small quantity will do), and send them to some refiner of reputation, and request him to give a price per ounce for them, either in cash or nitrate. But should the love of experimenting lead the photographer to undertake these processes, the following hints may be of service to him:—The crucible must be of good Stourbridge clay, and not too large for the size of the stove it is to be used in; it should be gradually heated up to a considerable point before filling, as it may prove faulty, crack, and cause a considerable loss of residue in the fire unless this precaution is taken. The draught of the stove should be sufficiently powerful, and the latter large enough in size to maintain a white heat—a closed stove, with coke for fuel, gives a greater heat than an open fire grate. I have successfully reduced many ounces by the following method:—Take

Powdered residues	1 pound
Powdered nitrate of potass... ...	1 "
Powdered carbonate of soda ...	1 "
Fine saw-dust	1 "

all quite dry, and well mixed. Put the crucible on the fire, build up the coke or coals round it, and heat up; then, with a long iron spoon, put a spoonful of the mixture into it; wait until the conflagration has quite ceased, then add another, and so continue until the crucible is nearly full. Heat up to a white heat for ten minutes, then pour the contents into the iron pot before mentioned, and continue the same plan of action until all the mixture is reduced. Throw the whole into a pail, and wash repeatedly with fresh water until only silver is left. It is well to test the first water, to prove whether any silver remains unreduced, and, if there be, to throw the water into the large cask, that it may be again precipitated.

The processes of reduction of the silver and gold into nitrate and chloride are very unhealthy and dangerous in inexperienced hands, and require great care to avoid destroying the household furniture, clothes, or the health of the operator and his family. For this purpose procure an oil flask; clean it well with hot solution of washing soda, then put into it 3 ounces of silver; place the flask upright in an earthenware cup, and this in a dish out of doors; mix 3 ounces of strong pure nitric acid with 1½ ounces of distilled water, and pour this upon the silver, a little at a time, taking care to avoid breathing the red fume which will arise; let the flask stand uncorked, shaking it occasionally until the silver is dissolved. Sometimes a little heat is necessary (when, as in winter, the temperature is low) to complete the operation. Be sure, in that case, to so place the flask that the fumes are carried up the chimney, and do not apply the heat too suddenly, or too much of it, otherwise it may violently boil over, causing a sad mess and a great loss. When the silver is all dissolved there may remain a deposit; this should be tested, as mixed residues may contain gold. The liquid nitrate of silver must now be poured into some glass vessel—a finger glass, such as is used at the dinner table, will do well; no article of earthenware can be used, as the boiling nitrate attacks the enamel, cracks it, and then is absorbed into its substance. Place the glass with its contents upon a saucepan of water, and evaporate to dryness, taking great care that the fumes pass quickly up the chimney, and not into the room; the nitrate will appear as a spongey mass, generally of a brown colour, but this depends upon the degree of purity of the silver employed. Dissolve this mass in as little distilled water as will thoroughly do so, then filter (it generally passes through very slowly the first time); put the filtered liquor back in the glass, and again evaporate; so repeat until it passes through the filter quickly, and free from colour, always using a fresh filtering-paper each time. Finally, evaporate until a pellicle forms, and set it aside to crystallize. The remaining liquor may either be evaporated for more crystals, or reduced to the strength of the printing bath, and so used.

The recovery of gold from its residues must be subject to the same precautions as to avoiding the acid fumes as before advised. I pour on the black powder some weak sulphuric acid, stir well, after a time pour it away, and repeat until all the iron is got rid of; wash well in distilled water, then pour on some nitric acid, the same strength as for making nitrate of silver; when this has taken up all the silver, it can either be poured into the cask, or the silver thrown down as chloride; wash with distilled water, adding this to the acid first poured off; dissolve the gold which remains in nitro-hydrochloric acid; evaporate to dryness in a glass vessel. As this salt is very deliquescent, it is better, when made by the photographer, to be reduced in a liquid state. An evaporating vessel of known weight when empty should be used; weigh this with its contents; the difference of the weights will be that of the chloride of gold it contains; add as much distilled water as will make the strength of the solution (say) one grain to a drachm; keep it in a stoppered bottle in the dark for use.

Since writing the above, I have seen in the News a letter from "H. B." complaining of injustice as regards the payment given by a refiner of residues. The Editor says, quite rightly, that dirt and extraneous matter often exist in residues to a much larger extent than might be supposed: a good guess could always be obtained as to their richness by reducing a small given quantity mixed with some proper flux by the blowpipe at a gas-burner upon a piece of charcoal; any intelligent watchmaker would do this for a trifle, should the photographer not understand its use himself.

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NEW METHOD OF PREPARING BROMINE SALTS.

BY DR. BOEDECKER.

A simple method of preparing the salts of bromine is the following: 20 parts of flowers of sulphur are placed in a glass flask, and 240 parts of bromine poured over the same. The two bodies resolve themselves into a dark brown, fuming, and oily liquid, possessed of a disagreeable pungent odour; and if this compound is poured into warm water, there is formed, with slight effervescence, sulphuric acid, hydro-bromic acid, and sulphuretted hydrogen. If, however, the bromide of sulphur is poured into 700 parts of water in which 140 parts of good freshly burnt lime have previously been stirred, we obtain sulphate of lime, bromide of calcium, and oxysulphide of calcium; and by means of filtration, the soluble bromide of calcium is separated from the other less soluble bodies. The filtrate is heated for several minutes with a few drops of sulphuric acid rendered slightly alkaline by the addition of milk of lime, and placed in a suitable locality to evaporate; after being allowed to stand twenty-four hours, the sulphate of lime becomes completely separated from the concentrated solution. The fluid is then filtered, and evaporated to dryness.

By dissolving the bromide of calcium in the least possible quantity of water, and adding thereto sulphate of soda, insoluble sulphate of lime and soluble bromide of sodium are formed. In this manner, therefore, any description of bromine salt may be prepared.

The two bromine salts most frequently employed in photography—viz., the bromides of cadmium and ammodium—need not, however, be prepared in this roundabout manner, for there are few salts that are easier to obtain than these. Bromide of ammonium may be obtained in the most simple manner by pouring bromine into a porcelain saucer half filled with water, and adding thereto, whilst stirring the mixture, liquid ammonia until no more free bromine is present. The solution is then evaporated, and bromide of ammonium of the purest description remains behind.

Bromide of cadmium, as also bromide of zinc, may be obtained by allowing bromine to come into contact with sheet cadmium or zinc under water. Iodide of cadmium may be produced by a similar method of operation. This manner is a much simpler one than that of preparing in the first place bromide of calcium, and then converting the same into the bromides of ammonium or cadmium.

DRY-PLATE PHOTOGRAPHY IN 1869.

BY SAMUEL FRY.*

From the first introduction of the collodion process landscape photographers have sought to avail themselves of its unequalled properties without the encumbrance of its bulky and heavy load of apparatus. The paper processes in vogue at the time collodion came into use had a great advantage in that the impedimenta for taking a large number of pictures occupied but a very small space. "Old photos" will easily recall many very plausible and, apparently, successful plans for working collodion without baths, &c., in the field, most of which produced, in the hands of the inventors, very promising results, but, nevertheless, never had more than a temporary popularity. Honey-plates had a long run, and capital pictures were produced, but the hygroscopic state of the film attracted dust, and many spots were the results. Collodio-albumen and many modifications produced capital pictures; also, in some hands, tannin. In 1867 we had the morphine, of which great hopes were entertained, as the resulting pictures in all respects resembled wet collodion; but an unfortunate uncertainty attended it.

Now, in all these processes, there were three definite points sought for, and only to a moderate extent fulfilled: they are—keeping-powers for indefinite periods before exposure; equality of result to wet collodion; and, thirdly, power of being kept, after exposure, indefinitely. These three things, combined with extreme simplicity of preparation and development, we now have in Mr. Gordon's gum process. I believe the mode of preparation, or the material employed, or both combined, give an image as nearly as possible resembling the product of wet work, whilst the immunity from "bedevilment" is remarkable.

Another point, whose importance can scarcely be overestimated, is the development with iron containing a small quantity of gelatinous or saccharine restraining matter. I have just been developing, for comparison, some with pyrogallic, and some with the above; and the trial is greatly in favour of the iron. The solution is, or should be, clear to the last, and the image of the same printing-value as in wet collodion. Most of the hard, chalky pictures which for a long time brought discredit on dry work were caused by the image being of such a non-actinic colour that very thin layers obstructed all light. Nine out of ten over-intensified by overlooking the fact that the power of the film to stop printing-light was far greater than they were accustomed to. I believe, and I am confirmed by Mr. Gordon, that these plates keep any length of time before and after exposure, without any alteration being necessary in their treatment. I know a case in which an amateur took seventy-eight such plates on a summer tour last year, and exposed them in all kinds of weather, and on all kinds of subjects; and he now has seventy-two views resulting, all of capital quality; the great and striking peculiarity of these pictures which struck me was the complete freedom from spots, or markings, or fog of any kind. Enormous over-exposure gave no fog and less flatness than would have been expected, whilst equally great under-exposure, when the development was pushed to a degree that was expected to give a dirty picture, or cause disruption of the film, gave neither.

As the result of a careful investigation of this process, and information from the producer of the process and his friends, who have largely practised it, I believe this is *the* dry process for 1869. I fully expect to hear that these plates bear successfully export to foreign countries, as the film seems hermetically sealed, and the surface thoroughly protected from all external influence. Of course, a long continuance in a damp place might be prejudicial; but of this I have no information. I have some plates now keeping for comparative experiment, of which some are kept in a cupboard through which hot-water pipes pass (probably the temperature is seldom below 80°, and sometimes above), whilst others are in a cold cellar, which is also presumably damp. I shall give each lot three months, and it may interest some readers to know the result.

I look upon the character of the gum image as being far superior to that given by tannin, or any of the albumen processes, because the colour is one of whose capabilities for printing we are well able to judge; whereas it is very much more difficult to judge accurately of shades of orange-brown, or reddish-yellow, such as tannin gives, when developing in a yellow room.

URANIUM AS AN INTENSIFIER.

BY JABEZ HUGHES.*

Among the interesting contributions to the Year-Book of Photography for 1869 is one on the above subject, by that painstaking and able amateur, Dr. J. Anthony. As his experience with this agent is so different from my own, I make a few remarks on the general subject.

The ordinary negative image produced by the iron developer, as Dr. Anthony feelingly remarks, is such a very delicate and beautiful image—so tender in all its gradations, from the deepest shadows to its highest lights—that it is a pity our printing process is not sufficiently perfect that we could employ it in that condition without having recourse to that opprobrium of negative photography, intensification. But in this stage the image is too weak to make a vigorous print; and hence the deposit has to be increased, not to improve its beauty, nor add to its definition, but solely to suit the exigencies of our present printing. Hence "intensification" is necessary, and, usually, to the serious injury of the beauty of the negative; for much of its delicacy is buried in the heavy deposit of silver. Now, if a plan can be devised by which, instead of mechanically increasing the deposit on the high lights, these high lights can be changed in colour only, so as to be actinically more opaque, then a great progressive step will have been effected. This improvement Dr. Anthony thinks can be made by using a solution of a salt of uranium instead of silver for intensifying, as the uranium does effect this change of colour without thickening the deposit. With this fact I am familiar, and I can bear the Doctor testimony to the extreme beauty of the negative so intensified. But in my experience these negatives carry with them a disadvantage that more than compensates for their original beauty: they are sensitive to light.

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* *The Photographic Journal.*

* *The Photographic Journal.*

In 1865 the process was published in the PHOTOGRAPHIC NEWS, and from time to time it has been alluded to in the journals. I early experimented with it, and had difficulty in mastering it so as to avoid stains and precipitation. It is unnecessary to mention how I conquered my troubles, as Dr. Anthony, in the article I have alluded to, has given a neat and ingenious mode of manipulation. I can scarcely describe my delight when I overcame my difficulties and produced such lovely negatives, yielding, as they did, equally beautiful prints. But my pleasure was short-lived, for I soon found that the negatives were affected by light, which made them gradually more and more intense, so that at last only the harshest and crudest prints could be produced, while the first ones were so delicate. The chief change was an actinic one; for the half-tones became practically as opaque as the high lights. But a change also did take place, to be recognized by the eye; for in the portraits that were printed *en vignette* the protected margin remained unchanged, while the central parts became of a deep red or copper colour. If the subject be held of sufficient importance, I could show such negatives at one of our Society's meetings, though the changed colour is more obvious by day than by gas-light.

In some negatives where I originally got a dense image from the iron developer, and where I used the uranium to give but a slightly increased opacity, such change was not very apparent. But as the most beautiful negatives are made by having the thinnest original deposit of silver, relying on the uranium to give them the chief density, it was in these the greatest destructive change took place. I was also annoyed by another trouble: sometimes the varnish would penetrate right through, and leave only a mere phantom negative. This latter trouble, however, I believe I could surmount; but the very obvious change that took place when several prints were produced from a negative compelled me to abandon the process. Sometimes, when I did not use much uranium, the negative would permit a dozen prints, of which the last were nearly as good as the first. For copying engravings this property may usefully be taken advantage of; and, singularly enough, Hermann Selle, the inventor of the process, speaks of it as being well adapted for that purpose; but he does not mention the reason. I also found another objection: the glasses on which uranium-intensified negatives were produced were unusually difficult to clean. The uranium seems to act in some more powerful manner on the glasses than silver.

I have read carefully Dr. Anthony's directions, and I do not detect any material difference from my own manipulations. He is evidently aware of the charge I am making against the use of uranium; for he says, "Many prints have been taken from prints so treated, and, as yet, I see no change in the films as indicative of increased density, as in the case of mercurial strengthening." The change in my negatives was so extraordinarily well marked that I can only suppose the worthy Doctor has not taxed his negatives to the extent a professional photographer is compelled to do. If this be not the explanation of the difference in the experiences, then I should be thankful to have some other one pointed out. If Dr. Anthony will kindly permit me to suggest a crucial experiment, I should like him to put one of these negatives in the full blaze of light for two or three days continuously, protecting one half so as to form a well-defined line of separation. If his negatives are subject to change as mine were, this test will show it more than taking two or three prints from any one of them. I feel reluctance in making this suggestion, as the Doctor's time, he being a professional man, is valuable. But I attach great value to the subject, and I am sure, if the Doctor finds that the half with this prolonged exposure to light does change, he will as freely report as he has done in detailing his previous experience. Perhaps other readers of this Journal will kindly record their experience with uranium. The process has so many valuable recommendations that it is worth some attention to know whether the objection I have made against it is a valid one. We can have but one common object in attempting progress: to prove all things, and hold on to that which is good.

IMPROVED ALBUMEN PROCESS FOR OPALOTYPES.

BY WILLIAM BELL.*

SOME months ago you published my process for making permanent porcelain pictures. I have since modified it so as to make it more certain and satisfactory, and now think it is all one could desire. Take of—

Albumen	2 ounces
Water	1 ounce
Chloride of ammonium	6 grains.

Dissolve the chloride in the water, add it to the albumen, beat them to a stiff froth, and let settle.

Silver Solution.

Nitrate of silver	1 ounce
Water	1½ ounces
Alcohol	12 „

Dissolve the silver in the water, pour out one-third, and add ammonia until the precipitate is barely redissolved; then add it to the other two-thirds. Clear it again with nitric acid, and then add it to the alcohol, shake well, and filter.

To use the above, proceed as follows: coat the porcelain plate with the settled albumen, using heat from an alcohol lamp or stove. Prepare a number at one time, as they keep well. Make the plate warm, flow it with the silver solution (the same as you would flow a developer over a plate), keeping it on for one minute. Drain and wash off the excess of silver with alcohol. Dry and fume five minutes, print, and tone with any good formula for toning albumen prints. Fix in hypo, 1 ounce to 10 ounces of water. Wash for four hours at least. Caution: have the plates well warmed before flowing with the silver solution, or, on drying, they will dry dead, and appear like ground glass.

Correspondence.

CYANIDE IN THE BATH.

SIR,—"What a fix I'm in!" as the collodion film said to the cyanide. So am I. Feeling as I do, I'm in duty bound to take up the cudgels and defend my offspring, the cyanide cure for the bath.

I read in this week's issue that Mr. P. O'Connor has tried it, and finds it a failure. Now I think the trial upon amateurs' baths does not give the process a fair chance, because an amateur's bath may not have been made properly at the commencement; and, secondly, amateurs, as a rule, only make such a small quantity of solution, and that being well worn by repeated immersion of plates. Amateurs never taking into consideration their numerous failures, such bath is liable to fog from weakness; *i. e.*, absence of nitrate of silver in the solution. Now cyanide added to such bath, taking up or down a certain quantity of silver, leaves such bath "too weak" to be doctored successfully.

I am often ten or fifteen miles from home, working 16 by 14 plates, and have found my bath fog from repeated immersion of such large sizes, which give off so much ether, my bath being only just big enough to take them; but the addition of a small quantity of cyanide solution completely clears the solution, as it always has done, and gives rich and brilliant results. I admit it requires some little experience, but I could explain a rule by which you could never fail. I therefore think it is of great use to the out-door photographer who is too far from home to get another bath, and is equally useful at home if you do not happen to have another made, or there is no "sun" appearing to act on the impurities of the sick solution to be doctored.

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* *Philadelphia Photographer.*

I give my experience for what it is worth, and though I find it so effective in my hands, still I do not insist everyone should be obliged to use it. I am not a professor of chemistry, or I would explain, in my way, more fully why I consider its action is right; but the fear of being pounced upon by some Goliath in the art forbids my attempting.

I might add, that I think much useful information might be given through the journals by practical workers in photography, who fear to write, expecting to be devoured by some theoretical professor, who has not the slightest practical knowledge upon the subject.—I am, yours respectfully,

James Tulley.

26, *Division Street, Sheffield, February* 22*nd*, 1869.

RESTORING CRACKED NEGATIVES.

Dear Sir,—Being, like Mr. England, "an unhappy sufferer" through the cracking of the film of several of my negatives, I have made most of them fit again for printing from by the following simple remedy.

I take a small piece of muslin or other soft rag, and tie up a little lamp or other dry black in it, making what I think house painters call a pounce; then I rub it smartly over the negative until all the cracks are filled up, which they will do readily, if the film is not away from the glass. No doubt the above is known to many photographers, but, never having seen it in any of the journals, or heard of anyone using the same, I thought it might be of service to some.—I am, sir, yours truly, N. W., North London.

Proceedings of Societies.

Photographic Society of London.

The following *Report of the Council* was read at the last meeting of this Society.

The annual period which has just expired will not be remarkable as an epoch of grand discoveries, but will, nevertheless, present evidence of general progress made in several departments of the photographic art, and betoken a wider appreciation of its scope and results. In portraiture, the beautiful specimens of M. Adam-Salomon, which were shown in the Paris Exhibition, and universally admired, may be said to have borne fruit in the magnificent results of a similar character lately displayed at the Society's exhibition. With improved optical appliances, further aided by the adoption of the principles of combination printing, a greater area of definition and wider distribution of focus in groups and landscapes may now be secured, whilst the means of multiplication by photo-relief, lithographic, and engraved plates have been making steady progress during the past year. The photo-lithographic process of Mr. Griggs has been described and practically demonstrated in the room; and, thanks to Dr. Forbes Watson and the authorities of the India Office, the members of the Society have been favoured with presentation copies of two specimens of Indian fabrics, plain and coloured, executed by Mr. Griggs. We are about to have a practical illustration of the capabilities of the photo-relief process invented by Mr. Woodbury; we have recently seen specimens of Mr. Swan's carbon printing and reproductions, also the carbon prints by single transfer of Mr. Blair; and the reports from Germany speak in high terms of praise of the rival processes of Prof. Husnik and Herr Albert, of Munich.

Amongst other novelties shown at the Society's exhibition in November last may be enumerated:—The photo-enamels of Mr. Henderson, Mr. Barnes, and others, in which a considerable improvement upon former results was apparent; specimens of the emollootype, eburneum, and collodio-chloride processes; some admirable examples of dry-plate photography, by Mr. R. Manners Gordon, and by Mr. England, and illustrations of Mr. Piercy's method of artistic printing. We had likewise shown, for the first time, a complete series of the photographs taken by the Royal Engineers in Abyssinia.

Great progress has been made during the past year in researches appertaining to the physical constitution of the sun, the polarized condition of the light of the sky; and the spectroscope has been widely and usefully applied. Several expeditions were equipped last summer for the purpose of securing unerring photographic records of the phenomena accompanying the total phase of the solar eclipse of August 18th. Observations were made independently by British and foreign investigators posted at various Asiatic stations under the path of the eclipse; and the pictures obtained all agree in indicating the existence, at that time, of a mighty horn of prominence, larger and quite distinct in character from the "boomerang" seen protruding from the limb of the sun in Mr. De la Rue's photographs of 1860. Photography has, during the same period, been continuously applied to the registration of magnetic and magneto-earth currents, and to the recording of meteorological results.

Referring specifically to the indications of progress made within our own Society, it may be mentioned that the financial statement, which has just now been submitted to you by the Treasurer, shows, upon the whole, an improving state of affairs. The number of members now constituting our body amounts to upwards of 220; and the Council propose shortly reprinting a corrected list to replace that which was prepared three years ago.

The following papers have been read at the meetings of the Society during the past session:—

Mr. J. R. Johnson, "On a New Method of Treating an Old Bath." The instructions given by the author have reference to the employment of permanganate of potash for the purpose of removing the impurities (especially those of organic origin) which, gradually accumulating in the nitrate bath, have a tendency to induce a fogged condition of development. Mr. Johnson's recommendation has been thoroughly tested, and pretty generally adopted.

Dr. Mann favoured the Society with two communications. The first was entitled "Photographic Difficulties of an Amateur in South Africa," and recounted the expedients resorted to under exceptional conditions of temperature and solar activity whilst working amongst the native tribes bordering on the British settlement of Natal, also the difficulties met and overcome in the way of apparatus, scarcity of water, and other embarrassing circumstances. At the June meeting Dr. Mann gave an interesting account of Professor Piazzi Smyth's photographic operations in Egypt, and described his so-called "Great Pyramid bath," which accommodates a collodion plate of the standard size of a microscopical slide (three inches by one). A series of enlarged transparencies of negatives taken within the Pyramids by the aid of the magnesium light were exhibited.

We have already taken occasion to refer to the very important subject brought under the notice of the Society by Mr. Griggs, and to the fact of specimens of his work being distributed to the members. In another branch of the Government service, the operations of the staff of photographers attached to the Royal Engineers were described by Mr. H. Baden Pritchard in a paper entitled "Photography in Connection with the Abyssinian Expedition," and we had brought before us the distinct applications of photography to the reproduction of maps and delineation of the geographical features of that hitherto unexployed country. Our recent exhibition was made the occasion of publicly displaying those photographs for the first time; they certainly constituted an attractive feature, and were eagerly examined. The May meeting was devoted to the discussion of some proposed modifications of the "wet process," brought forward by Mr. M'Lachlan, of Manchester, who claimed to have worked out an infallible system of collodion photography. Great expectations were excited by the mode in which the author preferred to bring his discovery under the notice of photographers; there was an unusually large attendance at the meeting, and the subject was fully discussed. Much indirect benefit has resulted from Mr. M'Lachlan's communication to the Society, although his views do not appear to have been widely indorsed by practical photographers. Mr. Dunmore described his "Truck Tent," a convenient form of portable apparatus, serving the purpose of a dark chamber, and mounted upon a pair of wheels. Lastly, the members are indebted to Mr. Nelson K. Cherrill for a complete exposition of the system of "Combination Printing;" and a noteworthy feature in connection with this event was the collecting together, for the first time, the several examples of this character produced by Mr. Robinson, Mr. Rejlander, and by the author. The mode of production of the Society's last presentation print, "Watching the Lark," was explained, and in each instance the peculiar features and *modus operandi* of the earlier illustrations.

We shall hear to night a scientific account of the principles and practice of "Actinometry" from a gentleman who has devoted himself specially to this study.

Besides the presentation print of Messrs. Robinson and Cherrill, just now referred to, and the pair of photo-lithographs from Mr. Griggs, the Council have been honoured with similar offers on the part of Mr. Mayall, Mr. England, and Mr. Henri Claudet, the last being now to hand. Some, if not all, of these will, it is believed, be ready for distribution at an early date.

We consider that a vote of thanks from the Annual General Meeting is due to Messrs. Robinson and Cherrill for the admirable example of art photography, entitled "Watching the Lark," which they have recently presented to the Society, and also to Mr. Henri Claudet for a portrait of the late Mr. Claudet produced by his topaz lens. Owing to the unfortunate fire which destroyed his studio, the original negative was destroyed, and the present print is a reproduction from a copy belonging to the Rev. J. B. Reade.

The Council record with regret the retirement of Sir Frederick Pollock from the office of President of the Society, which he has held with so much benefit to the Society for thirteen years, and a vote of thanks to the ex-Lord Chief Baron is now proposed; and they have also to record with regret the retirement of Dr. Diamond from the office of Secretary and Editor of the Journal, which offices he has ably discharged for eleven years, and is now proposed as Vice-President. The appointment of Mr. John Spiller in succession to Dr. Diamond has been already announced.

Since the date of the last anniversary the Society has to deplore the death of two distinguished members, Sir William J. Newton and Dr. H. G. Wright, both of whom filled the office of vice-president, and remained for long periods connected with the Society. They died within a few days of each other in January last.

Sir Wm. Newton was very active at the original formation of the Society, and moved the resolution proposing its establishment on the 30th of January, 1853. Five years later he was mainly instrumental in procuring an allowance from the Royal Fund, or "Queen's Bounty," for the benefit of the widow of Mr. Scott Archer, the inventor of the collodion process. At the early photographic exhibitions Sir Wm. Newton's calotypes were always to be seen; and he preferred printing his negatives by the development process. Sir William's communications to the Society were mostly of a practical character; but, as an artist, he frequently took occasion to urge the dependence of photography upon the older systems of fine art. He died in the eighty-fourth year of his age.

Dr. Henry G. Wright was elected a member at the anniversary meeting of 1859, and served on the council, afterwards becoming a vice-president. His papers "On the Medical Uses of Photography," the last of which was read two years ago, display an amount of enthusiasm in the study and exercise of his profession which fully warrants the high encomiums passed upon him by the writer of an obituary notice in the *Athenæum*. Dr. Wright was indebted for his first instruction in photography to our late Secretary, Dr. Diamond, and he highly appreciated the facilities for exact delineation which the camera placed within his reach. At the International Exhibition of 1862 he showed a portable form of camera and apparatus adapted for use in hospitals, and afterwards turned them to good account in taking a series of malformations and surgical subjects, which are preserved in the album of the Medico-Chirurgical Society. He has passed from us at the early age of forty-one years.

Manchester Photographic Society.

The ordinary monthly meeting of this Society was held at the Memorial Hall, on Thursday, the 11th inst., the Rev. Canon **Beechey**, M.A., President, in the chair.

The minutes of the previous meeting having been disposed of, Messrs. Warwick Brooks and John Oldham were elected members of the Society. The President then called upon Mr. Winstanley to perform further experiments in connection with the production of artificial light.

Mr. **Winstanley** said, as it was anticipated that many gentlemen would be present that evening who were not so at the last meeting, it was not intended that the whole of the experiments to be performed should be entirely different from those exhibited at the late meeting; indeed, he said, it was intended that the phosphoric light should play an important part in his experiments that evening. He (Mr. Winstanley) alluded to the discovery of oxygen gas by Dr. Priestly, and to the interesting properties of that gas, especially its power of increasing the energy in the combustion of those bodies which are capable of being burned in common atmospheric air. He (Mr. Winstanley) then ignited a piece of sulphur upon a deflagrating spoon, and plunged it into a jar of oxygen gas, calling the attention of the members to the increased beauty and brightness of the flame. He mentioned that this flame, though affording very little illumination, might, to some extent, be considered an actinic flame, inasmuch as the rays emitted by it are exactly of the colour of those rays of the spectrum which produce the greatest actinic effect. What the exact value of the sulphur flame might be from an actinic point of view, he (Mr. Winstanley) said, without carefully conducted experiment, he could not pretend to determine; but, whatever that value might be, he thought it would be interesting to the members of the Society, and to photographers generally, to know that that flame might easily be rendered continuous, which they would perceive was not the case with the sulphur flame in the jar of oxygen gas. He (Mr. Winstanley) then described, in some detail, the properties of sulphur; of its combination with carbon, and the properties of the carbon bisulphide, a sample of which latter body he then exhibited. He proceeded to explain the construction of his apparatus for the production of the bisulphide of carbon light, and exhibited it in action. The members, he said, would perceive that the flame produced when this apparatus was used was, so far as colour and brilliance were concerned, the analogue of that obtained in the former experiment, but with the advantage that it could be maintained for as long a period as was desired, and so, whatever value it might possess, could be utilized. He (Mr. Winstanley) then exhibited a specimen of the element phosphorus, and described at some length its discovery by Brande, of Hamburgh, and its interesting properties. He then burned a piece in a jar of oxygen gas, calling the particular attention of the members to the enormous acceleration in intensity undergone by its flame. He briefly described his phosphoric apparatus, and exhibited it in action. He said, when having a sort of a rehearsal in that room the evening before, he had attempted, with some approximation to success, to take a negative from a living subject. He (Mr. Winstanley) said that any attempt to take a negative under such extemporised circumstances as were alone possible at a public meeting, in a strange room and with a supply of chemicals and apparatus such as could, with the very little assistance he had received, be hastily got together for the occasion, must necessarily be a very hazardous experiment. He then prepared a plate, and having focussed upon the head of the President, exposed it for two minutes and a-half under the influence of the phosphoric light. Upon development, however, it proved to be under-exposed.

The members then adjourned to the committee room, where a lantern exhibition was given by Mr. Chadwick, Jun. During their absence Mr. Winstanley tried a second plate upon an engraving on tinted paper, and obtained a successful negative in two minutes and a half. The direction of the wind outside (which had been previously against the draft of his chimney) having become favourable, the phosphorus more strongly heated the light, consequently, immensely brighter. A third plate was then exposed upon the head of Mr. Lafosse, and, after two minutes and fifteen seconds, was developed, and proved to have been sufficiently exposed. The result (which, as a photograph, was, of course, much inferior to a picture produced in a gallery) was then taken into the committee room and passed round amongst the members, who were enabled to perceive what Mr. Winstanley intended to demonstrate, viz., that the light was possessed of very actinic power.

With the exception of the under-exposure of the plate used when the President sat, all the experiments were conducted with smoothness and success, and the audience listened to Mr. Winstanley's remarks with considerable attention and evident interest.

The meeting, which was the largest ever known in connection with this Society, terminated with the usual complimentary votes.

Talk in the Studio.

Cyanide in Sticks.—A correspondent says:—"Having used cyanide for some years with impunity, but often railed against its being in such large blocks that necessitated the use of the hammer and chisel before it would pass into a bottle I laid in a stock the other day, and was agreeably delighted to find it in small round sticks, resembling the sugar-stick of childhood, in various lengths, from half an inch to an inch, thus doing away with so much handling. Why should it not always be sold in this form?"

Portraits of Mendicants.—The *Mirror* of October 18, 1828, states that at Munich, every child found begging is taken to a charitable establishment. The moment he enters, his portrait is given to him, representing him in his rags, and he promises, by oath, to keep it all his life. Photography has proved, for a similar purpose, in some institutions, a more efficient means of portraiture than at that time existed.

Sir Thomas More's Skull.—Mr Bateman, of Canterbury, has favoured us with a curious photograph of the skull of the author of Utopia, taken by the aid of magnesium light in a vault. From the letter of Mr. Bateman it seems that when Sir Thomas More was beheaded, his head was exposed on a pike on London Bridge. His sister, Mrs. Roper, who lived here, obtained possession of the head, had it enclosed in a leaden case, kept it until she died, and had it buried with her. Thirty years ago, when the church was undergoing repairs, it was found, and placed in a niche in the wall of the vault, behind an iron grating. The leaden case was cut away, exposing the two eyes and the nose, which are seen in the print; the lower jaw had crumbled away when photographed, and soon after it was photographed it crumbled nearly all down. Mr. Bateman has also sent us a fine photograph of Barfreston Church, in Kent, a very pure specimen of Norman architecture, possessing one of the few remaining circular Norman windows, which possesses unusual elements of interest.

To Correspondents.

Latin Signatures.—"Lux Graphicus," replying to a correspondent in our last, says:—"It is a very singular coincidence that your correspondent—what's his name?—should have pitched into 'Lux Graphicus' about his bad Latin at the very moment almost that, as you know, he had determined to abandon that signature. It is long since he discovered that his *nom de plume* was remarkable for anything but its Latin purity, but as he did not otherwise indulge in the ambitious weakness, or sin, of quoting Latin, and therefore the great Duke of Wellington's advice does not reach him, either through the Editor or the kind correspondent, he did not think it worth while making an alteration, or adopting another *nom de plume* instead, especially as he never wished to be thought a Latin scholar, or made any parade of the little he knew." The whilom "Lux Graphicus" then adds some good-humoured raillery as to the tardy discovery or notification of his error by our last week's correspondent.

Young.—For strict accuracy, the lenses in a stereoscopic camera should never be further apart than the human eyes; but for stereoscopic effect—that is, for securing the effect of relief and projection—a little more separation may be permitted, especially for distant views in which there is an absence of near foreground objects to produce effect. The object of having a sliding arrangement to permit separating the lenses is to provide for such views.

Oxoniensis.—Three thicknesses of a moderately thick twill—grey, black, and yellow—will exclude light sufficiently from the interior of a tent. It will not be necessary to use any of the materials double. Unless the fabrics are stout and be woven very close, we should not recommend less than three. We have worked in a tent covered with two, but light was not perfectly excluded.

A. E. D., who enquired for the address of Mr. Joseph Wilson, a gentleman engaged in painting and photographic colouring, is informed that Mr. Wilson's address is 30, Shaisted Road, Kennington Park.

H. Hansen.—The card you enclose has many good qualities. The first fault is a little under-exposure; the second fault is the want of a little reflected light on the shadowed side of the face; and the third, the face is not quite as sharp as it should be; but it is by no means a bad pictorial result.

A Subscriber (Cardiff).—The lens should be placed at C. The D portion is merely for the purpose of carrying the negative the image of which is to be copied or enlarged. When you wish to use the camera for copying a print instead of a negative, remove the portion D, pin the print against a board, and place it in a good light; then place the camera the proper distance, according to the size of the copy you require, and proceed to work.

K. L. L.—It is possible to obtain an intense black in transparencies by various methods. The mode of toning with gold adopted by Mr. Burgess in toning his Eburneum prints, which are in effect collodion transparencies, gives a fine rich black. He employs a strong neutral solution of chloride of gold, one grain of the gold salt to a drachm of water; or, bichloride of mercury followed by a dilute solution of ammonia will give an intense black; or, bichloride of mercury followed by a dilute solution of hyposulphite of soda, or followed by hydrosulphate of ammonia, will give a fine black. Something depends, of course, on the character of the original deposit, and it will be found that an image developed with pyro, or with a gelatino-iron solution, will more readily receive a good tone than one toned with plain iron solution. 2. We have not seen any slides with printed outlines to which you refer, nor do we know how they are done; but we can conceive that it would be very easy to print the outlines in an ink which would readily be transferred to glass, in the same manner as the printed designs are transferred to earthenware for burning-in. There is a transfer varnish sold by fancy stationers by which old engravings can be transferred to other materials. You may use a quarter-plate lens with the same condensers you have employed in your lantern, with a very slight modification in position.

W. C.—As a rule, contact between albuminized paper and nitrate of silver should cause no discolouration in the latter. In some conditions of the albumen, discolouration is readily produced, especially when the solution is exposed to the light. We immersed some portions of the paper you sent in water, and then added nitrate of silver, but did not notice any discolouration.

W. Pearson.—The varnish duly received. We will take an early opportunity of trying it.

Camden.—You do not state whether you wish to produce transparencies on dry or wet plates. We prefer the wet plate method; but we cannot give you full instructions in this column. You will find an article giving detailed instructions on the subject in our Year-Book for 1868, or in the Photographic News, Vol. XI., page 547.

G. R. F.—We noticed the violet tint on the lights, but did not make it the subject of especial comment, because it appeared to be one of the ordinary or frequent concomitants of a bath in the state you described. We have frequently found that a bath in an inert condition deposited gold in a pink or violet state evenly throughout the print, without exercising any especial toning action on the metallic image. It is a somewhat perplexing condition, and has not been accurately defined. It is probable that the gold has been converted to the condition of auric oxide, which does not appear to possess toning properties. Such a state generally seems to indicate incipient reduction, and if the solution be placed in the light, it will soon be seen to become purple. Thanks: we are always obliged by a full statement of difficulties, and when they occur in the hands of experienced photographers who can describe them accurately, and save us from any doubt as to their origin in bungling, they are often very instructive.

H. J. Godbold.—Received. Thanks. Notice in our next.

Received: "More Light; a Dream in Science."

Errata.—In Mr. Fisk's article on plain paper in our last, a slight error appears, which, although not likely to mislead, is better corrected. The formula should stand thus:—

Whey ... ... 40 ounces
Chloride of ammonia ... ... 200 grains,

or 5 grains of the chloride to each ounce of whey. Other chlorides may be used, an equivalent proportion being added.

Several Articles in type are again compelled to stand over.

Several Correspondents in our next.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

THE PHOTOGRAPHIC NEWS.

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NEW STYLE OF PORTRAITURE.

We have to introduce to our readers a novelty in portraiture which will, we think, be found to possess great interest to the majority of professional photographers, as it will enable them to bring before their customers a new style of portrait, highly effective and artistic in result, easy and cheap to produce, and promising lucrative practice. The new style has recently been introduced by Mr. Sarony, of Scarborough, who has protected it by patent, but intends, we believe, to afford facilities for its general practice on terms which will not be oppressive to photographers.

It will be somewhat difficult to convey a just idea of the result by a description of the method of producing the pictures, inasmuch as it seems altogether inadequate, at first glance, to the production of an effect of such apparent finish and excellent style. The appearance of the picture when complete is that of a portrait on tinted drawing-paper, with a photographic basis, very cleverly and highly finished in chalk; whilst there is not, in fact, a single touch of the pencil or crayon about it. As this seems a paradox, we must proceed to describe in detail.

The picture, which is a vignetted bust on a 14 by 12 plate, the head about three inches long, consists of a suitable transparency, fuller details regarding which we shall give in our next. When backed with white paper, and examined by reflected light, it presents the effect and appearance of a fine print. Instead, however, of being backed with white paper, it is backed with a piece of tinted drawing-paper—a delicate cream, grey, or drab—on which is produced, in bold hatching, the graduated *entourage* which commonly finishes a vignetted figure in chalk, in order to partially break and graduate the outline of the picture, and cause it to merge into the background, a space being left in the middle of this hatching for the face. When the transparency is placed upon this, the result is marvellous, the effect of a picture of price is produced at once, and it becomes very difficult to believe, at first sight, that the picture is not elaborately worked up throughout. A few days ago we showed some examples to an art-connoisseur who had not a very profound belief in the art capacity of photography. He exclaimed: "Ah! but these have been cleverly worked upon in crayons, and the finish is very excellent." When the mechanism of the pictures was shown to him he was puzzled beyond measure, as, indeed, we were ourselves when the matter was first brought under our attention.

The excellence of the effect is due to two or three causes. In the first place, the piece of hatched gradation surrounding—and partially, in places, merging into—the figure is done with a masterly pencil, and most materially affects the result. In the next place, the backing of rough drawing paper gives a character not to be attained with smooth paper: the texture is pleasing, and there is a softness due to the rough surface, not permitting perfect contact, which is very valuable in large heads. Of course the transparency must be a good one; that is, one suited to its purpose. It is much thinner and less fully developed than an image intended to be viewed as a transparency by transmitted light. It must be absolutely free from fog or deposit of any kind on the highest lights, bare glass in such places being imperatively necessary to purity and brilliancy. And regarding the portrait itself, the better the art qualities in the negative, the better, of course, will be the final result as a picture.

We have said that no touching at all is necessary; neither is it; but it is not the less possible and permissible in pictures which may seem to require it, either for the removal of defects or the improvement of details; spots can be touched out, the markings of the eye, hair, &c., may be strengthened; and it would not be difficult, for those who like the effect, to touch the extreme high lights with white pigment, so as to produce the effect of a crayon drawing in black-and-white chalk on a tinted board.

Mr. Sarony has styled these pictures "photo-crayons," an excellent and descriptive name, its only fault being that it has already been used to describe photographs actually finished by the artist in crayons, and so may possibly cause a little confusion. The arrangements for permitting photographers to work the patented method will be found detailed in our business pages. We may remark here, however, that the plan adopted seems just in principle, and will, we think, be found convenient in practice. By supplying the tinted drawing-paper with the hatched vignetting gradation at a specific reasonable price, licensees will pay for the use of the patent just in the exact proportion in which they avail themselves of its advantages, and no more; and they will, at the same time, obtain a piece of masterly work in hatching at a cost less than they could themselves produce it. About a dozen slightly different designs will be furnished, we believe, the work being that of Mr. Napoleon Sarony, whose skill as an artist is well-known in the photographic profession.

The fact that existing negatives can be utilized so easily, and pictures of a new character produced by them, is an important element in the commercial value of a novelty of any kind. Mr. Sarony has adopted the plan of producing copies of these "photo-crayons" from various negatives in stock, and sending the picture on approval, with a lithographed circular stating particulars, to such of his customers as he thought desirable, the novelty, beauty, and cheapness justifying such a course. The success was so great that they were retained, he found, in almost every instance. We believe that Mr. Sarony here offers to photographers facilities for giving a new impetus to portraiture—something which will create a new demand without decreasing the business in any other respect. The patented photo-crayon has many special qualities to recommend it, and scarcely any drawback. The style is new: the result is good; the method is easy; the profit is large: whilst the price to the public is moderate. The effort to maintain a uniformly reasonably good price for such pictures is one in which we hope all photographers will join. Let all compete in aiming at the highest excellence, and none in producing the work at a price below the standard proposed.

LEAF PRINTS.

We have been favoured by Mr. Thomas Gaffield, of Boston, whose researches in connection with the changes effected on glass by the action of sunlight are familiar to photographers, with an interesting series of examples of "leaf-prints," or photographic impressions of leaves, ferns, &c., produced by using the natural specimen as a negative, and so securing nature-printing by the agency of light.

The possibility of producing photographic transcripts of any kind of natural object which will in some degree transmit light has been tolerably familiar since the first days of photography; but although in many cases a method of delineation of great beauty and value, it has been singularly neglected. Little more than twelve months ago Professor Himes brought out an interesting work, entitled "Leaf Prints," describing the method of obtaining photographic impressions of leaves as an aid to the study of botany. Without a knowledge of the labours of Professor Himes, it seems that Mr. Gaffield had been working in a similar direction, beginning primarily, however, with a different motive. Having been long engaged in research as to the varied power of different coloured glasses to transmit light, he was induced to experiment with leaves of different colours, and with the same kinds of leaves in different stages of maturity and colour, varying from green, through yellow, to red. Besides the interest of the scientific experiment, Mr. Gaffield has found a further interest in the extent to which the leaf printing could be made available in producing designs of a decorative and ornamental character. Nothing can exceed the beauty of form, structure, and venation of many leaves, and few things so admirably lend themselves to purposes of ornamental design. Ruskin observes, "Leaves take all kinds of strange shapes, as if to invite us to examine them. Star-shaped, heart-shaped, spear-shaped, arrow-shaped, fretted, fringed, cleft, furrowed, serrated, sinuated; in whorls, in tufts, in spires, in wreaths endlessly expressive, deceptive, fantastic, never the same, from foot-stalk to blossom, they seem perpetually to tempt our watchfulness, and take delight in outstripping our wonder." The individual leaf, being so full of beauty, derives fresh beauty from arrangement and combination with a view to bring out analogies and contrasts, and a little experience in their respective densities enables the designer to arrange them so as to secure varieties and gradations of light and shade, as well as form. The examples with which Mr. Gaffield has favoured us are chiefly arranged in wreaths or coronals, and consist in some cases of ivy and other leaves, and in some of a mixture of heaths and the fronds of delicate ferns very gracefully arranged. It is difficult to say, especially in relation to the latter combination, whether the result is more pleasing produced direct from the plants, in which a pretty lace-like effect is seen printed in white on a black ground, or this print used as a negative, from which to produce prints with a dark image on a white ground.

The examples showing the degree in which leaves of various colours transmit light are curious and interesting, and show that, at least in this instance, red is decidedly more opaque to actinic light than any other colour, a red leaf perfectly protecting the paper, leaving a clean white space, giving no indication of venation or structure, whilst the green leaves, printed at the same time, show every marking. Yellow, apparently in a thin leaf, however, prints almost as well as green; orange is more adiatinic; and red completely so. Whether as aids to botanical study, or as means of forming pleasing ornamental designs, we think that the practice of printing from leaves, ferns, and grasses is worth more study from the amateur than it has yet received.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Ownership of Negatives and Copyright in Portraits—Photo-Mezzotints and Printing through a Medium—Carbonate of Silver Paper—Tinted Paper for Photographs—New Style of Portraiture—New Carbon Process—Societies.

The two cases mentioned in the *Foreign Miscellanea* of the News last week give a somewhat ominous suggestion as to the mode in which courts—at least, on the Continent—deal with the question of property in the negative, although neither seems to furnish any precedent for a decision as to the ownership of negatives in ordinary cases of portraiture, and I suppose certainty in regard to that will not be obtained until some case be litigated. Meanwhile, since portraitists and the public seem to be satisfied with the present practice, which leaves the negative in the hands of the photographer, and treats it practically as his property, possibly it is as well that the system which works well should not be disturbed by any legal decision. Photographers hitherto have not had much occasion to be grateful to the law, as it has often appeared opposed to their interests; and if Mr. Foster's reading of the first clause of the Copyright Act be the correct one—which is, I am glad to know, however, very doubtful—portraitists generally are constantly in much greater jeopardy than they have any notion of. The idea, however, that every one who orders a photographic portrait, and pays a few shillings for it, acquires a copyright in every print which can be taken from the negative, and that the photographer who produced it is liable to the penalties of piracy if he take a single copy from the negative without the leave and licence of the person for whom he took it, seems strangely unjust and vexatious, and could scarcely have been contemplated by those who framed the law. The clause of the Act is clumsy enough; I must confess, however, that I scarcely think that this is its legitimate meaning. In any case, photographers are in a tolerably safe position, as a rule, inasmuch as, in order to acquire a legal interest in a copyright, it is necessary that the picture should be registered at Stationers' Hall before any copies are issued; and as the public do not usually register portraits, either before or after they are issued, the photographer is tolerably safe from the risk of penalty for pirating the portrait he has taken.

I have recently been experimenting in the production of what Mr. Carl Meinerth has styled photo-mezzotints, and have been much pleased with the results. My experience, however, confirms the remarks recently made on the subject. Merely printing through a medium does not effect much improvement. The idea of securing softness by this mode of printing is a very old one, and it has been taken for granted that it would produce the desired result; but I find, if the medium is thin, very little difference is made; and if thick, a fuzzy want of sharpness is easily secured, but without any especial softness. The examples of Mr. Meinerth's mezzotints which I have seen have very different qualities, and are in some cases exceedingly soft and beautiful, without being offensively wanting in definition. I find that by interposing a plate of glass between the paper and the negative, and printing in a deep box, so as to exclude, as much as possible, all except the direct rays, I can gain the desired end. It is very curious to notice how little divergence the rays suffer in passing through the space of transparent glass after traversing the perfectly clear parts of the negative, and how much they are diffused and dispersed after passing through the opaque parts of the negative. I notice a suggestion from a correspondent to the effect that sheets of gelatine would be found useful as a medium. I have thought of that, but should hesitate to use it, because of the risk. Gelatine is an exceedingly hygrometric substance, and would readily absorb moisture from the atmosphere. If used in such a state, as it easily might be, without seeming moist, and placed in direct sunlight, the warmth of the sun would almost inevitably melt it sufficiently to stick irretrievably to the negative.

I have recently made a trial of the carbonate of silver paper, and find the results very good. For amateurs it will certainly possess many advantages in the simplicity, readiness, and cleanliness of the method whereby the paper is made sensitive. The operation of printing on a small scale just to secure single impressions of two or three negatives is very troublesome, and the most troublesome part is sensitizing the paper, and all the preparation it involves; but to place a piece of paper in a box or drawer with a little ammonia is a simple operation. The chief objection I have to the paper is, that it must be used in ignorance, and I think that photographers should always know with what materials they are working. It is scarcely sufficient to say that the paper is prepared with carbonate of silver, when it certainly contains albuminate of silver, and probably chloride of silver as well. I think that photographers would be perfectly justified in combining against the use of any materials the nature and preparation of which are kept secret; but I suppose as long as people will take quack medicines in faith, they will use in their trades, without much hesitation, preparations the nature of which is kept secret. But if photographers are uncertain of what materials they make their pictures, they can scarcely be expected to have any idea of how long such pictures will last.

I see that the fashion of employing tinted papers for photographs is likely to be revived, and there can be little doubt that if used for suitable subjects, and in tints of suitable character, it may be used in many cases with advantage. For portraiture there can be little doubt the delicate tint of drab or brown called "India tint" is most effective. I may here mention a method which I employed some years ago with advantage, to produce such a tint, leaving sharp lights of pure white. I took an aniline brown dye—one of Judson's preparations, if I remember rightly—and diluted it considerably. The prints were floated on this until they acquired the right tint. When white lights were required, previous to floating, the points of light—such as linen, lace, &c.—were touched with a little melted wax, applied with the point of a sable pencil. This effectually protected the lights from the action of the dye, and was easily removed when finished. When skilfully managed the effect was good.

I have seen a new style of portraiture, which, I am told, has just been patented by Mr. Sarony. It is, without doubt, the most effective thing I have seen for some time, and, as I understand that it will be easy and cheap in production, it is calculated, I fancy, to assist in reviving the flagging fortunes of portraiture. The pictures appear like highly-finished crayon portraits on tinted boards. As I presume that you will publish instructions in detail whenever the exigencies of the Patent Law will permit, I will not enter into more detail here.

Whilst existing carbon patents are coming into collision, I understand that the specification of a new process has just been entered at the Patent Office by Mr. J. R. Johnson, and that in the new process a singular simplicity is attained. I have seen some of the results, which are perfect, and from what I learn of the new method it will tend materially to popularize carbon printing.

The societies have been active and interesting. The Photographic Society of London presented a capitally interesting Annual Report; and the new president, Mr. Glaisher, delivered a stirring address, affirming his belief in the Society, and his resolve that a new effort should be made to make it more worthy of its capabilities and position. Mr. Bing read a paper on his capital photometer, and in the course of a discussion which followed answered some theoretical objections by a statement of practical results.

The North London Society was rich in papers. Mr. King read a good paper on Neglected Art Fields for Photographers, full of useful suggestions; and Mr. Barnett, the Secretary, read a paper on Enlargement by Artificial Light, describing his use of zinc turnings burnt in the flame of gas, which gave a brilliant actinic light.

At the South, Mr. How gave a fine magic lantern display, and the Rev. President contributed materially to its interest and value by comments and explanations of the subjects, on all of which, whether pertaining to microscopy, archæology, natural history, or any other branch of knowledge, he seemed equally at home and full of information.

Some of the provincial societies have had interesting meetings; but several whose names appear on record as still in existence never appear to meet. I hope that they are not dead, but sleeping, and will yet awake to new vigour.

A FEW HINTS ON THE CONDUCT OF PHOTOGRAPHIC INVESTIGATION AND DISCUSSION.

BY S. THOMPSON.

To barely enumerate all the laws of thought and sources of fallacy involved in calling into play the machinery of the human mind upon the smallest photographic experiment, as well as upon more extended scientific investigation, would alone fill the literary pages of two or three numbers of the Photographic News. In the brief space at my disposal I can but point out a few of the commonest rules and the most frequent sources of error, neglect of which, any careful reader of scientific journals will have noticed, is a matter of everyday occurrence.

The first and greatest rule of all is to rigidly abstain from hazarding any conclusions whatever, upon any subject of investigation upon which you may be engaged, until you have collected such a series or array of facts as to warrant your proceeding to that step—the last and greatest, and that to which all the other steps should be subservient—namely, that of deducing some general principle common to the whole. Half the errors, disputes, and disappointments that arise may be traced to this source—*hasty generalization.* It requires great patience to abstain from doing so when sufficient facts have been gathered to serve as a clue to what appears to be a general law. But rushing into print with crude assumptions, based upon facts whose uniform relations and connection with each other has not been sufficiently established by long-continued observation, or of which a not sufficiently extensive collection has been made to justify generalization, always leads to disappointment and much waste of time in scientific meetings and in journalistic space, and often engenders heartburnings and angry discussions, although that this is a feature at all peculiar to photographic discussion will be at once denied by anyone who knows anything of other scientific societies of far loftier pretensions, where, too often, controversies are carried on with a degree of acrimony almost incredible, but which happily do not lead them to forget the *social amenities* away from the arena of conflict. Kingsley has embodied this phase of the scientific mind in one of his happiest illustrations. "Professor Ptthmllnsprts was a very great naturalist, and a very kind, goodnatured little old gentleman, and very fond of children, and very good to all the world as long as it was good to him. Only one fault he had, which cock-robins have likewise, as you may see if you look out of the nursery window: that, when any one else found a curious worm, he would hop round them and peck them, and set up his tail and bristle up his feathers, just as a cock-robin would, and declare that he found the worm first, and that it was his worm; and if not, then it was not a worm at all. And he read a paper before his society to prove it, which he did—at least to his own satisfaction. Whereon a certain great divine, and a very clever divine he was, called him a regular Sadducee, and probably he was quite right. Whereon this professor in return called him a regular Pharisee, and probably he was quite right too. But they did not quarrel in the least, for when men are men of the world, hard words run off them like water off a duck's back. So the professor and the divine met at dinner that evening, and sat together on the sofa for an hour afterwards."

Another great difficulty which arises is, the inevitable want of any fixed rule whereby it may be decided what is a sufficient collection of facts and instances to warrant the deduction of a general principle. The impossibility of such a rule applicable to ever-varying cases is obvious. A mind disciplined to calm, patient investigation, and animated only by the desire to search out what is truth, unbiassed by all spirit of partisanship, will have no difficulty in deciding in each particular case, always guarding against the tendency to deduce conclusions from insufficient data. The late Lord Macaulay, before he became famous, when on circuit, used, after dinner, to set the table in a roar by gravely introducing some extraordinary proposition leading to the most absurd and preposterous conclusions. The source of the fallacy and fun was the drawing of conclusions from facts perfectly true, but too limited in number to admit of general principles being founded upon them. An instance of this kind of fallacious reasoning may be pointed out, which, though less piquant, will be more familiar to photographic readers. A society having photographic objects for their bond of union, assumed that the distinctive excellence of a certain Parisian photographer of world-wide celebrity was due to after-manipulation of the proofs. A print of this master having been obtained, was put to the test, and found to have been worked upon; therefore the assumption was considered proven. Now, it may or may not be true, that the distinctive excellence of the producer was due to retouching, but it was most illogical to hazard general conclusions from such an exceedingly limited number of facts. Had a number of different prints of different subjects been tested in succession, sufficient data might have been furnished to warrant a conclusion. If the particular print tested had happened *not* to have been "touched," the consequence of such astute reasoning would have been that, logically, the converse of the case would have been forced upon them—a conclusion, perhaps, equally untrue.

The simple truth is, that while there is no rule in determining the point at which we may proceed to generalization, very much depends upon the nature and character of the facts and their proper establishment by the exercise of a series of mental operations of the very highest kind. It is quite true that Newton founded some of his greatest principles upon very slender relations of facts; but he long meditated over them in a mind filled with collateral knowledge, and of almost boundless capacity, ere he ventured to give them to the world. Faraday's habit of mind was to brood for months over facts or phenomena to which he had some clue before he ventured even a hypothesis.

A few well-ascertained, authentic facts, whose relations have been by long observation and experiment found to be uniform and unvarying, will suffice for the formation of a theory which may then be brought to the fierce light of a general discussion. To learn to separate from the mass those facts which are connected with it incidentally only, and to be able to trace principles of accordance among facts which appear to the ordinary observer remote and dissimilar, and to retain those only that are uniform, essential, and reliable, is a very high exercise of mental power.

There are many sources of error to be guarded against in collecting so-called facts, but the above phases have been dwelt upon chiefly because, in the present tone of photographic thought, the tendency appears less to err in facts than in deducing hasty and premature conclusions from them. How much that is good in idea, and, perhaps, contained the germ of valuable principles, has fallen through because it has brought in an unripe state before the world! To hunt down phenomena to their true causation requires, also, much labour and patience and restraining self-discipline, which only come with time; or, as Wordsworth so happily expresses it—

> "In years that bring the philosophic mind."

PHOTOGRAPHIC LEAF PRINTS.

BY THOMAS GAFFIELD.

As you have been kind enough to notice some humble experiments of mine on the action of sunlight on glass, I thought it might interest some of your readers to know what might be accomplished by your beautiful art in showing forth the more beautiful productions of nature in the forest and the field.

In pursuing my sunlight investigations, I was led into an examination of the comparative power of different coloured glasses, of ground glass, and of the various kinds of colourless glasses, to transmit the chemical or actinic rays. In this course of experiments I made several photographic sheets, illustrative of this interesting power of the sunlight, to which, during the past year, attention has been called in photographic journals at home and abroad.

During my last vacation spent in the country, I took some pressure-frames and sensitive paper, in order to carry on my experiments with glass. It occurred to me, one day, that differently-coloured leaves would probably have a similar effect to that of the different glasses in transmitting or cutting off, in different degrees, the action of the chemical rays on the sensitive paper. I gathered some fresh green leaves, and some red, orange, and yellow autumn-tinted ones, and, placing them in my pressure-frame, was pleased to find a very interesting picture produced, showing that the red leaves cut off nearly all of the chemical effect of sunlight, while the orange, yellow, and green passed a greater or less amount of the actinic rays. These first experiments were, of course, quite crude; but on my return to Boston I continued them, by the kindness of Messrs. John A. Whipple and A. Marshall, at their rooms in Washington and Tremont Streets. Calling to my aid gentler hands than my own, I obtained some beautiful wreaths of autumn leaves and of ferns, and have been much pleased with the charming and exquisite photographs which have been made by the pencil of the sun. I have sent copies to several photographic friends, and have been much gratified with the universal testimony to the interesting character of the self-printed leaves and ferns.

Your readers will understand, of course, that all that is necessary to make these pictures is, to gather the leaves and place them as negatives in the pressure-frame, and to expose them until a strong dark print is produced. The time of exposure must vary with the season of the year and with the brightness of the day. In a pleasant day of summer or autumn, an exposure of ten minutes will sometimes make an excellent picture. After being toned and fixed, the print will show, under a magnifying glass, the most delicate veins and ribs of the leaves.

A camera picture of the leaves would show no detail and no distinctive shading, giving only a dark and flat impression of the shape of the leaves. By using as a negative the sensitive paper sheet taken directly from the leaves, we obtain an interesting print, showing the leaves with different degrees of shading upon a light background. When the leaves are so faded as to be useless, this second sheet can be used as a negative to reproduce the first one, although the impression is not so sharp, and does not show the details so finely, as the print taken directly from the leaves. These leaf-prints can be copied by the camera, and make very beautiful card and cabinet pictures.

To the lover of nature, to the botanist, and the amateur photographer, it seems as if leaf-printing would open an interesting field for pleasant work and research. Possibly, it might afford new material to the artist in making designs for printing calico and wall papers, or carving in wood or stone. The amateur photographer can find in it an infinite fund of amusement in his summer rambles through gardens, fields, and woods. The professional photographer can obtain a few paper negatives every year, which, if they present a tasteful arrangement of leaves, ferns, or flowers, will be sure to furnish him a source of occupation in his days of dull business, and to give him a pecuniary return in the sale which, we think, they must always command.

After working a long time upon these interesting leaf-prints, I ascertained that I was not alone in my admiration of their beauty, and I was surprised to learn that a work upon the subject had been lately issued by Benerman and Wilson, in Philadelphia, edited by Professor Charles F. Himes, of Carlisle, Penn. This is a very neatly printed and quite an interesting volume, and should be purchased by all who desire to pursue this work by themselves, or by the aid of some friendly photographer.

Should any of your readers desire to obtain specimens of the work done in this field, which, we believe, has not been cultivated at all—or to any great extent—at home or abroad, they can be accommodated by applying to our friend Mr. A. Marshall, 145, Trement Street, Boston, who has a few fine glass and paper negatives, from which impressions can be multiplied.

I trust that this account of my humble work in this direction may not be uninteresting to the readers of your valuable journal.

Boston, January 30th, 1869.

TRANSFERRING NEGATIVES.

BY M. MARION.*

I have made some fresh experiments in lifting up and transferring negatives by means of a pellicle of collodion. The most obstinate negatives, which would not have succumbed to my first experiments, I can now transfer with the greatest ease. The following is the mode of proceeding.

In a vessel of which the bottom is entirely covered with varnish (the Sœhnee varnish is the most suitable) I float the pellicle, slightly agitating the vessel. I then remove from the varnish the diaphanous sheet. I seize it by the two superior angles, and, after having drained it, I apply it on the negative, avoiding air-bubbles and dust. I then leave it to set, and at the end of fifteen or twenty minutes I plunge the negative in water for fifteen or twenty minutes. At the end of that time the negative film adheres firmly to the pellicle, and could be lifted; but sometimes the adherence of the image to the glass is such that these simple precautions would not suffice. It is necessary, in such cases, to have recourse to more energetic means. Here is a means that generally is successful. I plunge the negative in alcohol 46° during thirty or forty minutes, and after having let it drain, I warm it by placing it over a spirit lamp; presently I coat it with varnish as if it were a new negative. I then warm it again, and I apply the pellicle as indicated. I now warm it again, holding the negative at some distance from the flame of the lamp. I then leave the varnish until it has had time to set (about two or three hours); then I plunge it in water for ten or twelve hours, and if, in trying to transfer it, I find resistance, I again place in water, and prolong the immersion until the image leaves the glass.

The detachment is made with the greatest ease, even with hard negatives that have been fixed with hyposulphite or cyanide, and varnished; it does not matter what varnish. Neither old nor new negatives resist these means. The varnish, plunged in water before complete desiccation, whitens, and the negative looks so opaque that it almost appears as though it had vanished. It reappears completely on immersing in the alcohol 40° for five minutes, after transfer, then drying spontaneously. As far as possible, it is necessary to make the pellicle thick; the work, in this case, is easier and more certain, and the negative more substantial. The strong pellicle has not a fault, except its high price. I make for this purpose pellicles 22½ by 18 inches. In it there is a litre of thickened collodion, so any one can judge whether it is possible to make it at a low price. As for me, I have not found the means of making it for less than eight francs; but it is double the strength of that I originally made at the price of four francs. I exhibit samples of the one and the other, and of the transferred negatives upon each of the kinds, which can be examined.

PHOTOGRAPHS ON ENAMEL.

BY M. DUCHEMIN.*

The plates of enamel used in that class of painting of which the illustrious Petitot was one of the greatest masters, and employed, also, at the present day in the production of encaustic photographs, are prepared upon copper or gold, and sometimes, also, upon platinum, a metal capable of supporting the highest temperature. The enamel is composed principally of silica, oxide of tin, and oxide of lead; the cost of its production is very high, and the material, moreover, possesses one very great drawback, which is the impossibility of obtaining it with a perfectly flat surface, and it is for this reason that the photographer has been compelled hitherto to make use of a transfer in producing pictures upon enamel.

Sheets of glass covered with a fusible enamel prepared with an arsenic base are a very economical substitute for these plates, and will be found perfectly capable of bearing the heat of a furnace, supposing always they are made in the proper manner; and thus we have open to us a new way of progress in art and in photography. The fusibility of the enamel ought always to be greater than that of the glass; but, on the other hand, the dilation of the glass should be the same as that of the enamel. This lesson was, so to speak, taught us by the ancients, who enamelled the medals in order to counterbalance their dilation. Care must be exercised in the selection of glass for the application of an enamel, according as the latter is more or less easily fusible, for all descriptions are by no means suitable to the purpose. Up to the middle of the eighteenth century glass was composed exclusively of silica, together with potash and soda, and with this material it was impossible to prepare a fusible glass enamel, the production of which forms the subject of this communication; but, owing to the immense progress which has been made in chemistry during the last fifty years, it has been found practicable to obtain glasses of so great a degree of fusibility that many of them are capable of application to the production of enamel plates. The proportions and ingredients used in the preparation of the enamel is as under:—

Arsenic...	30	grammes
Nitrate of potash	30	,,
Sand	90	,,
Litharge	250	,,

By employing enamelled glass of this description the process is much simplified, as a very high temperature is unnecessary to effect fusion, and recourse need not, therefore, be had to closed muffle furnaces specially constructed. This is a point of some importance.

The kind of glass necessary for this description of work, which is not yet manufactured commercially in France, may, moreover, be used in many useful ways beyond its connection with photography; thus, drawings or writings upon glass, which may be effected as easily as upon paper, may afterwards, in the space of one minute, and without difficulty, be rendered unalterable by means of a muffle furnace. This process, therefore, besides being applicable to the production of both opaque and transparent enamel photographs, presents us with a very simple means of perpetuating designs, autographs, acts, and notices which are exposed to the action of the weather, horticultural labels, &c., and the specimens which are now before the eyes of the members of the Society bear out my statements in this respect.

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* Communicated to the French Photographic Society.

* Read before the French Photographic Society.

With reference to the employment of these plates in the production of enamel photographs, I may state that the printing is made direct, without a collodion transfer, the surface of the enamel being merely subjected to a simple roughening, so as to allow of the negative being placed in intimate contact with it. If, when ground, the surface of the enamel is sufficiently polished, photographs of the greatest degree of delicacy may be obtained. Thus we obtain a perfectly flat plate of enamel of a greater or less degree of thickness or transparency, which could not have been produced so easily and economically with enamelled metal, and which is suitable for the reception of the photographic image, either in the camera or under a negative or positive, according to the description of the picture required.

Whether I employ bitumen of Judea, or citrate of iron, or perchloride of iron and tartaric acid, or bichromates, or other salts, is perfectly immaterial, for I can with any of these materials produce within the space of a few minutes, and without using any transfer, a good encaustic photograph.

Let us take the bichromate of potash method as an example, employing for the purpose a solution compounded in the following proportions:—

Water	100 grammes
Gum	3 ,,
Honey	1 gramme
Bichromate of potash in crystals...	3 grammes.

This solution is carefully filtered and applied to the surface of an enamelled glass plate, and, when dry, four simple operations only are necessary to the production of a permanent photograph:—

1. Exposure of the sensitive plate to the action of light.

2. Development of the image by means of a brush, and a powder prepared according to the undermentioned formula; viz.:—

Oxide of cobalt	10 grammes
Black oxide of iron	90 ,,
Minium...	100 ,,
Sand	30 ,,

3. Decomposition of the bichromate of potash by plunging the developed picture into a bath composed of—

Water	100 grammes
Hydrochloric acid	5 ,,

and subsequent washing of the plate in pure water, and drying it.

4. Burning-in of the picture on a smooth furnace-plate which is covered with a layer of chalk, so that the shape of the enamel may not be injured during its sojourn in the furnace. A minute is sufficient for the operation in a well-heated open muffle furnace, the image becoming perfectly fixed and glazed within that period; the cooling of the finished result must be attended with those simple precautions necessary to be undertaken when manipulating with enamels upon copper.

Practical experience, which is often in opposition to theory, has taught me that these enamels on glass are as easily handled in the furnace as those upon metal, and that therefore their employment may be introduced for many industrial purposes; and as enamelled surfaces of this description may be obtained of considerable size, it will be, of course, possible to produce encaustic pictures or designs of very large dimensions.

ON THE CLEANING AND PREPARATION OF GLASS FOR DRY-PLATE WORK.

BY EDMOND PHIPPS.*

Glass cleaning, it must be confessed, is one of those few disagreeable details connected with our art-science which, however anxious we may be to have completed as speedily as possible, demands, notwithstanding (especially in dry-plate work), a certain amount of care and consideration, and, I venture to think, a little more than is usually accorded. It is, at the best, a most uninteresting operation, and I must ask your indulgence if you find my paper uninteresting also.

With respect to the selection of glass, I would merely urge that a little care be exercised; let its thickness be in proportion to the size of the plate, but, above all, see that each plate is of nearly equal thickness throughout, not, as I have seen some, three or four times thicker at one end than the other. With such plates it is unsafe to use even moderate pressure in the printing-frame, and there are other objections which I need scarcely mention. A slight curve in the glass is not objectionable, if the concave side be used. Scratches and air-bubbles are rather objectionable; where the former occur, the use of a substratum (if the contrary side of the glass is not available) and printing in the shade will reduce the evil to a minimum. In the case of air-bubbles, use that side of the glass nearest to the defect. Before proceeding to cleaning, my own practice is invariably to remove the sharp corners and edges of the glass by means of a corrundum file or piece of hard stone, such as a scythe stone. Some employ an iron file; I rarely have used one, as I am inclined to think the sharp and jagged cuts invariably produced might, where the glass is thin, tend to the subsequent cracking of the negative; this, however, is merely supposition. If there be an imperfect or unpolished side to the glass, scratch it in one corner, that it may be readily distinguished in the subsequent operations of coating with the substratum and with collodion.

The glass having been so far prepared, the cleaning operation commences. Various solutions and substances have, from time to time, been suggested for glass cleaning, and perhaps in no particular do photographers differ so widely in their recommendations. Some invariably use acid solutions; others (perhaps the majority) pin their faith to alkalies—generally, common soda; others (and I class myself among the number) avoid cleaning by chemical means, but confine themselves, where practicable, to the use of substances acting mechanically, such as tripoli, &c.

For new glass, I do not think that, as a rule, any chemical whatever is necessary, except it may be for the removal of soap marks made by the manufacturer. I never encountered any difficulty with them myself; but I am told, on good authority, that it is very difficult to eradicate the effects of them. For removal of an old varnished film, nothing is better than—if, indeed, equal to—boiling water poured over the plate with some force. For removal of an ordinary unvarnished film I think I have tried nearly all the chemical solutions that have from time to time been recommended, and I have come to the conclusion that there is but little difference between them. To a dry-plate worker, however, the mere facility with which an old film may be removed, or a glass cleaned, is of secondary importance. His first care must be to avoid the use of any chemical calculated to eat into or saturate (if I may so say) the substance of the glass. To a wet-plate worker a trace of such chemical is not so important; the short time elapsing between the preparation of the plate and the completion of the negative does not allow the objectionable chemical to attack the film. The purity of the surface is to him all-important, and the cleaning operation often consists of a mere polishing. With a dry-plate worker the conditions are nearly reversed. If a substratum is used, the degree of polish required for wet-plate work is by no means necessary; whilst, as I have said, it is of great importance that no foreign chemical has been absorbed by the glass.

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* Read before the Liverpool Amateur Photographic Society.

I will merely take one illustration. Many here have no doubt met with the defect known as "tannin's measles." These peculiar spots have been shown by Major Russell and others to owe their origin to the presence of foreign substances in the glass, and, from my own experience, I can fully confirm this. On many occasions I have distinctly traced these defects to the incautious use of soda as a cleansing agent. The soda has a strong penetrating power, and the moisture ever present in the atmosphere, acting on the salt left in the glass, causes it to act on the sensitive film. The longer the plate is kept (especially after exposure), or the damper the atmosphere, the more marked are the defects likely to be. It is important to observe that the action of the alkali seems to be not so much a destruction of the sensitiveness of the film, as a destruction of the latent image when formed. It behoves us, therefore, to be extremely careful, when this chemical (and I may not be wrong in saying any chemical solution whatever) is used, that all traces of it be destroyed by copious washing. It would, indeed, be prudent, where practicable, to abandon the use of all chemicals for the purpose, resting content with the use of clean water assisted by fine tripoli or some such like substance; in my own practice I invariably adopt this method, and since I abandoned the use of soda, which at one time I used exclusively for the purpose, I have never been troubled with the defects I have spoken of; at the same time, I must not be understood to say that impurities in the glass are invariably the root of the evil; they arise occasionally from other causes. But on this subject I must not enter; it is not within the scope of my paper.

I consider the great aim of a dry-plate photographer ought to be to so regulate his working as to produce uniformity and certainty in the results. Dry-plate photography is at the best but comparatively uncertain. Is it not, therefore, impolitic to increase that state of uncertainty by the use of substances which, in the absence of extraordinary care, may conduce to defective results?

Before I conclude, I ought to say a word or two on the various substrata usually employed. Though many have been recommended, there are but two which are generally used, viz., a solution of india-rubber in benzine, and dilute albumen. It is impossible to say which is the best; both have their merits, and demerits. At one time I used nothing but india-rubber; latterly I have used albumen; of the two it is easier of application, and, perhaps, not less efficacious than the other. The india-rubber solution is best made of—

India-rubber...	1 grain
Common resin	$\frac{1}{8}$,,
Benzine	1 ounce

Place in a warm situation for twenty-four hours, and filter. The sample of benzine must be entirely free from grease, and before dissolving the rubber pour a little over a glass, evaporate, and draw the finger over it; it will be readily seen if the benzine leaves an oily residue; if it does, it must be rejected. The film must be dried before a clear fire, and the greater the heat to which it is subjected the less the risk of cracking. Cracking is sure to follow if too much rubber has been dissolved. When coating a large quantity of plates due allowance must be made for the evaporation of the benzine.

Albumen solution is generally prepared by beating up 1 part of albumen with from 7 to 15 or even 20 parts of water. I use about 12 or 15, as in my hands a strong solution gives rise to honey-comb markings, blisters, and other defects clearly traceable to the substratum. The great merit in an albumen substratum is in being able to apply it without the necessity of drying and polishing the plate after washing; but care must be taken to avoid the production of bubbles. Let the albumen be filtered through sponge into a developing-cup, and, when applying it, let the lip of the cup come almost in contact with the plate. The excess must be flowed off, and not used a second time. The film may be dried spontaneously, or by heat. It will be advisable to keep the plates, when once coated, in a dry place, otherwise the film will absorb moisture. If the weather be damp it is prudent to place them before a fire prior to use.

As far as my observations go, neither an india-rubber substratum (even when used strong) or dilute albumen will protect the latent image from the attacks of deleterious substances contained in the glass: from surface impurities, if slight, a substratum may be a safeguard. I may mention that I find the film is more sensitive to the action of a damp atmosphere when a substratum of albumen is used, than when plain glass is employed. It will be well to remember this when storing plates for use. Another circumstance I would also call your attention to; viz., that the latent image can be more speedily developed when an albumen substratum is employed. To anyone interested in the subject it will be time well spent to coat half of several plates with a substratum, and closely observe the action of the developer and the characteristics of the resulting negatives under varying circumstances.

In conclusion, I would again ask your indulgence for the uninteresting character of my paper. I do not profess to have brought anything new before your notice, but if, by my remarks, anyone is guided or assisted, I shall be amply repaid.

Correspondence.

THE URANIUM INTENSIFIER.

Sir,—I am glad to see Mr. Jabez Hughes recurring, in your last number, to the subject of the ferridcyanide intensifier, as I have long wished to ask that gentleman whether, in the course of his experiments with the redeveloper in question, he has tried the effect of adding a few drops of gold to each ounce of solution? I have now had three years' experience of this matter, and, while agreeing with Mr. Hughes in his reason for rejecting the uranium intensifier *pure et simple*, I must, at the same time, subjoin the important fact that the addition of a small portion of gold appears completely to do away with the otherwise fatal objection raised by Mr. Hughes. I have many negatives which have repeatedly been printed from during the last two years in all sorts of lights, but not one out of the whole number has been injured in the manner referred to by your correspondent. Two maxims I would suggest to any one who may wish to give the ferridcyanide intensifier a trial:—

1st. Always rather *under-expose*. Over-exposure is fatal to success.

2nd. With all due deference to Dr. Anthony, never use nitrate of uranium so long as the persulphate is to be obtained. Messrs. Hopkin and Williams supply the latter at 2s. an ounce, and by post if required.—I am, sir, your obedient servant, H. J. C. Andrews.

26th February, 1869.

LIVERPOOL DRY PLATES.

Sir,—Your correspondent writing from Geneva, 25th January, seems to have had a bad lot of the above plates. Perhaps my experience with these plates, extending over two years, may interest him. I had some plates from Mr. Mawdsley in July last, which were defective, and which I observed. The plates, however, which I had previously obtained from the Company, of various sizes, from 10 by 8 down to quarter-size, were uniformly good, with very few exceptions, and the plates I have had since are the best I have ever had. Mr. Mawdsley can, I believe, explain to

"Amateur" the reason why his Company's plates last summer were not equal to those he had sent out previously.

It is very much to be desired that one should be able to depend upon a batch of dry plates, and I do not doubt that we shall be able to depend upon these plates in future.

I may mention that I have been using for transparencies this Company's plates prepared some eighteen months ago, and exposed at intervals over that time. I have never been able to detect any loss of sensitiveness, or any other deterioration. The last I used, about a month ago, I exposed to gaslight twenty-five seconds, and had, as usual, a transparency of excellent colour, and the film really free from defects. I shall be glad to show your correspondent some of these.—I am, sir, yours faithfully,

A Liverpool Amateur.

CYANIDE FOR CORRECTING THE BATH.

Sir,—Finding that Mr. Tully accuses me of undervaluing his "offspring," I hasten to disabuse this gentleman's mind of such a grievance, as it was never my intention to depreciate the merit due to Mr. Tully. And why I at first entered into this subject is, the "offspring," being influenced by another photographer in this town to mix with my pupils (amateur photographers) through the columns of the local journals here, attempted to throw them into disorganization—each pupil paid me seven guineas for instructions—and so I felt in duty bound to protect them. So here was where I felt that the "offspring" was a bold boy, and calculated to do me an injury if I did not denounce him openly. As a general rule we are not so quick at seeing the faults of our own offspring as those who look at them with an impartial eye, otherwise Mr. Tully would scarcely take up his cudgels to me while he spares his young defaulter. Though we may be strongly actuated by force of habit to continue in error, we must feel such obstinacy leaving us in the shade, enabling our neighbours, who follow the path of reason, to distance us in a very short time. He who professes to live by any science, and condemns the theoretical foundation on which such science is based, could not possibly prosper in that state. "Est modus in rebus sunt certi denique fines quos ultra citraque nequit consistere rectum."

I may infer from Mr. Tully's remarks that he is very far in advance in the art through practical experience. I consider the same of myself, but in both cases there is no proof. I can only give one example in justice to myself, and if my statement be not correct, I wish those gentlemen in this town who read the Photographic News will contradict me if wrong. It is my practice and experience which enable me to charge sixteen shillings per dozen for card portraits in this town, where business is so worked up as cards being taken by others at from three shillings per dozen to anything more or less. And in reply to another remark, lastly I say, if errors were not duly corrected we could never have an end to the unsightly example of the blind leading the blind.

Patrick O'Connor.

Clonmel, February 28th, 1869.

BURNING MAGNESIUM.

Dear Sir,—While the subject of artificial light is being discussed in your News, I should like to ask if you or any of the gentlemen who have experience with magnesium can tell me how to prevent the ribbon choking up the guide-tube, and so preventing the brilliant burning of the ribbon?

Some time ago, when in Birmingham, I sought your advice on the construction of a lantern for enlarging by the magnesium light, and succeeded, with your help, in constructing one which has been of much service to me; but I have all along been troubled by the choking up of the tube spoken of above. The magnesia (?), as the ribbon gradually accumulates round the mouth of the tube and becomes a clotted mass which causes the magnesium to burn with a dull red light. It will burn well enough for about a minute, but some of the negatives I have to enlarge from take an exposure of five minutes, necessitating a stopping of the clockwork, unchoking, re-lighting, &c., causing much delay, forgetting count of time, and leading to many other inconveniences. I wonder how Mr. Proctor gets over the difficulties?

One other question: Should the lens be a fixture, and the negative moveable, to focus with, as in the solar camera; or may the negative be a fixture, and the lens made to move to focus with in an apparatus for enlarging by the magnesium light?—Yours most respectfully,

Magnesium.

[The lens may be a fixture, merely moving the negative and focussing-screen; but we prefer that each should be moveable. Can any of our readers give a hint on the burning of magnesium so as to get rid of the accumulation of the product of combustion?—Ed.]

OWNERSHIP OF NEGATIVES.

Dear Sir,—On the 2nd of February, 1866, a lady, whose name is well known to the British public, sat for her C.D.V. The proofs were duly sent, and met with decided approval. I asked permission to publish them. The lady had not the slightest objection, but was glad for me to do so. Since that time I have been constantly printing them. The lady died a short time ago, which caused a considerable demand for her C.D.V. Judge of my astonishment, a week ago, when the husband of the lady (through a relative) wished me to give up the negative. This I refused to do, but promised I would not issue any more C.D.V.'s until I had thought the matter over. To my greater astonishment I subsequently received a letter from a solicitor in Lincoln's Inn Fields, stating that the lady had no power to give me permission to print her C.D.V. for publication without the consent of her husband (the husband was aware that it was printed for publication, I should say, two years ago), and demanding *the negative* on or before the 6th inst., which demand I certainly shall not comply with. Whether the husband has power to stop me publishing the C.D.V. after having done so for three years, I must take opinion upon; but giving up the *negative* is out of the question, as I think there can be no doubt it is my property. I should be glad to hear your opinion, also the opinion of some of our amateur photographers in the legal profession.—I am, dear sir, yours truly,

William Plumtree.

[No legal decision has been obtained as to the ownership of portrait negatives. We have no doubt, ourselves, that the negative belongs to the photographer. In contracting to supply a certain number of portraits at a given price, he does not engage to supply also the *cliche* from which such portraits are produced. See Photographic News, Vol. XII., page 493, where you will see the question argued at length. The question of your right to continue publishing is more doubtful. If you have the lady's consent in writing, her husband will, we presume, be bound by it. *Qui facit per alium facit per se.* Publication for several years without interdiction is in your favour.—Ed.]

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on the 23rd February last; Mr. O. R. Green, President, occupied the chair.

The minutes of the former meeting were read and passed, with the added note that a second print of Mr. Green's picture of "Pont-y-pair," size 24 by 18, had been awarded to Mr. Henderson, for the year's work, his production being so nearly equal to those which obtained the first prize.

The Chairman then made the following remarks:—Before commencing the business of the evening, I will detain you with a few remarks, such as I would have made at our meeting had I known that our esteemed late President was so soon to vacate the chair, and that I should then be called upon to fill that post of honour. At the present time, when we look at kindred societies, and consider the mercantile convulsions of the last few years, it must be a great satisfaction to all of us to find that our Association is in such a prosperous condition, both financially and numerically. As a provincial Amateur Association we have every reason to be satisfied with our position, and we may, I am sure, look back upon our past career with pleasure. Few arts have excited such interest since its discovery as photography, but although it has done wonders and conduced much to the happiness of the human race in every civilized country on the globe, and no individual could now do justice to the aid it renders to the arts, science, and manufactures; yet its past history will doubtless be eclipsed by its future glory. Like the microscope, it will probably be instrumental in opening up new worlds to our finite senses, and be applied in ways and to uses not yet dreamt of. At our last meeting you saw photographs of the waves produced by sound, exhibited by Mr. Skaife; and when we read in Professor Tyndall's work on Heat that gas flames burning in glass tubes are made to dance and sink in harmony with the human voice, it does not seem beyond the region of possibility that photography may be able to fix both the sounds of music and the human voice. A few days since one of our members, Mr. Hayes, informed me of a new commercial adaptation of its powers in producing designs on glass to be corroded by fluoric acid, by which means designs and pictures are produced in frosted glass more beautiful than anything hitherto done by the old and tedious manual process. I am glad he has left some specimens this evening for our inspection. It is the object of this Association, be it remembered, to improve the many processes of this fascinating and useful art, also to find new fields for its application. How best to further these objects should be our study, and it is desirable to bear in mind that the more fellow-labourers we have, the greater will be our progress and the pleasures derived therefrom; therefore I take the liberty of reminding you that it is not desirable that we should be satisfied with keeping the flame burning by experimenting ourselves, but we should, at the same time, be photo-propogandists, and zealously endeavour to make converts. Of late, your processes have been greatly simplified, and results rendered more certain, and, thanks to the energy of some of our Association, landscape photography is no longer the dirty, disagreeable, black work which formerly deterred many from persevering in it; hundreds of beautiful negatives having been produced last year by our members without the slightest trace of free nitrate of silver or any other chemical which would stain the hands. If this stride were more known, hundreds of gentlemen, and, probably, ladies, would find pleasure and recreation in the pursuit. Further improvements are destined to be made; with a view of giving a stimulus to that end, it has occurred to me that as our Treasurer has some gold to our credit, we might use a little of it to tone the next season's work, by announcing a few prizes to be awarded at the last meeting of the year, which will be the last Tuesday in November. If you approve of the proposal, we will discuss the subject, if there be time, later on in the evening; if not, at our next meeting. I will merely name a few objects for which prizes might be awarded; namely,—The best stereoscopic photograph, by a member of the Association who has not worked more than three years at the art; the best twelve stereoscopic views of the streets of Liverpool; the best twelve stereoscopic views of the ecclesiastical architecture of Liverpool; the best twelve stereoscopic views of the docks and river; the best twelve stereoscopic views of the public buildings and office architecture; the best six stereoscopic views of the river or coast in a breeze; the best six enlargements of microscopic objects; the best enlargement, from stereoscopic size to 10 in. by 12 in.; the best photograph in enamel; the best year's work; the best photograph in natural colours which will bear exposure to daylight without change.

At a later period of the evening it was resolved, on the motion of Mr. Cook, seconded by Mr. Mawdsley, that notice be given in the next circular that Mr. Green's suggestions in reference to prizes be discussed.

The Treasurer's report was next read, the accounts having been duly audited by Mr. Wilson and Mr. Johnson. There was a balance in hand of a satisfactory character after paying all expenses.

On the motion of Mr. Wilson, seconded by Mr. Hughes, a vote of thanks was unanimously passed to the Library and Museum Committee for the use of the room during the past year.

The following objects of interest were exhibited:—

By Mr. Forrest—A number of pictures on glass by Mr. Young's process, produced by means of fluoric acid, after taking the picture from a negative on a stratum of bitumen of Judea. By Mr. Mawdsley—Three stereo negatives exposed and developed on the day of the meeting, one of which was on a plate prepared from collodio-bromide sensitized two months before, the same half-ounce of developer being used for all. By Mr. Murray—Two cartes of Sir Charles Slingsby, by Holroyd, of Harrogate. By Mr. Guyton—A plate box of novel sort, intended for one or two dozen wet or dry plates; the front was hinged, and springs were placed to prevent the plates from moving when carried, V-shaped grooves reducing the risk of tearing the films. Mr. Guyton also exhibited ten photographs of clouds taken by Mr. Sampson, of Southport.

On the motion of Mr. Cook, seconded by Mr. Watling, it was resolved that the presentation print for 1869 be selected and ordered before the end of July.

Mr. Hubback presented a handsome Question-Box to the Association, as promised at a former meeting.

A vote of thanks was given to the exhibitors.

Mr. Wilson gave a short account of the recent soirée in Manchester, which he had visited with some other members, and been very cordially received. There was a beautiful and extensive collection of photographs, the contributions from Liverpool taking very satisfactory comparative rank, especially the large pictures by Mr. Green.

Mr. Green expressed a wish that the competitors for prizes at the last meeting would give members another opportunity of examining their productions, as in the midst of their business they had been imperfectly seen.

The following members were ballotted for and unanimously elected:—Mr. G. H. Webb; Mr. J. G. White; Mr. E. D. Williams, Jun.; Mr. William Henderson.

The paper of the evening, on Glass Cleaning—being the first of a series by various members on the Collodio-Bromide Process—was then read by Mr. E. Phipps (see p. 114).

This gave rise to a short discussion on the influence of the albumen substratum on the latent image, and a vote of thanks was subsequently passed to Mr. Phipps, on the motion of Mr. Wilson, seconded by Rev. T. B. Banner, shortly after which the meeting separated.

Edinburgh Photographic Society.

This Society held its third popular meeting in the Queen Street Hall on the evening of Wednesday, February 26th.

The business was begun with a short statement by Mr. John Nicol, explanatory of the reasons why the pictures were being exhibited, stating that they had been prepared for the Russian Government by Mr. Samuel Highley, of London, for the purpose of assisting in the teaching of general history to some of the students in their academies; and he said that the absence of any perfectly reliable record of many of the subjects rendered the production of some of them impossible by means of photography. He then introduced the lecturer,

Dr. Robson, who gave an able introductory address, and proceeded to describe the various pictures as they appeared on the screen, highly eulogizing the idea of pressing the oxyhydrogen lantern into the service of education.

The meeting, which numbered between 500 and 600, testified their approbation by repeated bursts of applause. At the end of the lecture a vote of thanks was proposed to Mr. Highley, and warmly responded to; and the same having been tendered to the lecturer, the meeting was dismissed.

French Photographic Society.

A meeting of the Society was held on the 5th ult., M. Balard, President, in the chair.

M. Radau presented the Society with a copy of his recent work entitled *Les Derniers Progres de la Science*, and M. Aime Girard called the attention of members to a chapter therein upon Light, in which the researches of MM. Bunsen and Roscoe, relative to a method of measuring the chemical intensity of luminous rays, was discussed; this section of the work M. Girard pointed out as of the greatest interest to photographers.

MM. Geymet and Alker addressed a letter to the Society in reply to M. Poitevin's remarks at the last meeting relative to that gentleman's claim to be considered the father of the photo-enamel process. In this communication it was stated that if to anybody was due the honour of having introduced photography upon enamel, M. Lafon de Camarsac, and not M. Poitevin, was the man, inasmuch as the former patented his process in 1854, while that of M. Poitevin was not taken out until the year after. M. Poitevin's method was, it is true, based upon the insolubility of bichromate of potash, whereas that of M. de Camarsac treated of the application of perchloride of iron; but a modification in the mode of manipulation does not constitute a new invention; and, moreover, the reactions made known by Poitevin were not novel, but such as had been made known previously by Mungo Ponton. Photography upon enamel was an accomplished fact when M. Poitevin brought out his patent, although the mode of operating that he described was a different one. MM. Geymet and Alker did not wish to put forward any claims as to their being inventors, but merely asserted that they had been the first to publish the details of manipulation of the process.

M. POITEVIN, in reply, admitted that M. Lafon de Camarsac was the first to produce photographs upon enamel, but stated that he had introduced the method of preparing the same by the aid of bichromate; he had, for several years, given instructions in the process in the same manner as that followed by MM. Geymet and Alker.

The discussion then dropped.

A further communication was then read from MM. Geymet and Alker, praying the President to make known that in a paper forwarded by those gentlemen on the 6th November last the process of producing photographs upon enamelled glass (and such as was brought forward by M. Duchemin at the last meeting) was described. The Editorial Committee of the *Bulletin* had omitted the paragraph relating to this branch of the process, deeming it of little importance; and now MM. Geymet and Alker requested its insertion in order that their claim to priority of publication might be substantiated.

M. AIME GIRARD admitted that the original paper in question had been curtailed, and that the following paragraph had been omitted:—

"The transfer of the image by means of the collodion (and we hope soon to be able to discover a means of obviating it) is only necessary when the surface which is to receive the picture is at all curved. The operation is a very simple one if a photograph is required upon a flat surface—as, for instance, a sheet of opal or ordinary glass. *In this case it suffices to pour the bichromate liquid direct upon the glass surface, which is to be introduced into the muffle furnace;* the image is developed, after exposure, by means of a brush, and heated without further preparation."

M. DUCHEMIN replied, and defended his right to priority of publication in reference to the preparation of photographs upon an arsenic base. He stated that he produced his first enamel picture without collodion or transfer upon the 1st September, 1868, and that the next one was obtained upon the 2nd of the month, and forwarded to the Academie.

M. BAYARD stated that five or six years ago M. Joubert produced vitrefied photographs in the manner just dscribed, one of the specimens being still in the possession of the Society.

M. BELBEZE communicated a note upon a tea dry-plate process. The advantages claimed for it were its excellent preserving qualities, delicate film, and freedom from stains. The sensitiveness of the plates was equal to those prepared with tannin—or, rather, with collodio-albumen—and their development could be effected very rapidly. The infusion of tea was prepared by pouring 100 cub. cents. of boiling water upon 2 grammes of tea, decanting when the leaves had been precipitated, adding 5 grammes of sugar, and, after filtration, mixing therein 5 cub. cents, of alcohol. A developer containing gallic and acetic acid is used, to which a little alcohol and nitrate of silver solution is added. M. Belbeze stated that over-exposure is not injurious, and hastens development, and that it is almost an impossibility to obtain fogged negatives when using tea dry-plates.

MM. MARGUETT and DAUPHINOT presented a collection of carbon prints produced under the tuition of M. Braun, of Dornach, and M. Jeanrenaud.

M. MARION addressed a note to the Society, intimating that he had relinquished his patent for an improved method of carbon printing.

A statement of the affairs of the Society was read, and the following gentlemen elected upon the Committee: viz., MM. Civiale, Davanne, Fortier, Mailaud, and Martin. As a Commission to adjudicate the annual prizes of the Society were nominated MM. Becquerel, Bertsch, Bingham, Ferrier, Girard Jeanrenaud, and Soulier.

MM. GEYMET and ALKER made some further remarks upon photographing on enamel, and strongly recommended the employment of an improved sensitive preparation, as under:—

Water	1,000 grammes
Glucose	140 ,,
Saturated solution of bichromate of ammonia	15 cub. cents.

M. JEANRENAUD communicated the results of his further experience in printing by the carbon process.

The proceedings then terminated.

Scientific Gleanings.

DISCOVERY OF BROMINE AT STASSFURT.—We (*Scientific Review*) are informed that the discovery of a notable amount of bromine in the mother-waters of the Stassfurt salt works, in Prussia, has been confirmed. This is good news for chemists and photographers. We alluded last month to the discovery of iodine among the volatile products of blast furnaces.

CURIOUS PRODUCTION OF COLD.—Dr. Phipson has recently discovered that an intense degree of cold is produced by dissolving sulphocyanate of ammonium in water. Many salts, more especially salts of ammonia, lower the temperature of water whilst dissolving; but, according to Dr. Phipson, no compound produces this effect in so marvellous a manner as sulphocyanate of ammonium. In one experiment 35 grammes of this salt, dissolved rapidly in 35 cubic centimetres of water at 23 degrees Centigrade, caused the thermometer to descend in a few seconds to—10 degrees C. The moisture of the atmosphere instantly condensed itself on the outside of the glass in thin plates of ice.—*Scientific Review.*

A NEW LIGHT.—A modification of the Bourbouze lamp lately described in this journal, appears to have been recently effected by Mr. J. A. Hogg, gas-engineer, in Edinburg, who thinks he has discovered a method of producing an intense actinic light by means of coal gas mixed with air, and without danger of explosion. The mixed gases are lighted after passing through a tissue of irridieplatinum wires at a given pressure. In a few seconds the metal becomes heated to a white heat, the flame disappears, and an intense white light is the result. It can be used for photographic purposes as well as the magnesium light; an enlarged picture can be taken by it on paper. It is stated also that the light will continue in a gale of wind without any protection round it, and that a downpour of rain will not affect it.—*Ibid.*

A NEW METAL.—The Master of the Mint is hunting down a new metal. The fact that palladium occludes something like eight hundred times its volume of hydrogen gas leads to the conclusion that metal and gas unite to form an alloy, "in which the volatility of one element is restrained by its union with the other." The density and magnetic character of the palladium are so altered by the combination that the compound requires a specific name, and Professor Graham calls it *hydrogenium*. Hydrogen must play a leading part in the philosophy of the future. The Abbe Moigno, propounding what he calls a grand idea, conceives it to be the nearest approach to the primordial matter of which suns and worlds are formed. He conceives the ether that prevades space to be formed of atoms which, aggregated or combined with other atoms, form molecules of hydrogen gas. Truly enough the fiery vapour seems to present itself wherever mortal ken can search. It envelopes the sun and glimmers in the stars; and the meteorolite coming from space holds it in its metallic grasp. So the learned but occasionally eccentric Abbe's hypothesis has more than a leg to stand on.—*Once a Week.*

NEW TEST FOR NITRIC ACID.—Sulphate of aniline, in the hands of M. Braun, has become an exceedingly delicate test for nitric acid. In a test-glass about 1 c. c. of pure concentrated sulphuric acid is placed (1·84 density); to this is added, drop by drop, ½ c. c. of a solution of sulphate of aniline, prepared by adding 10 drops of aniline of commerce to 50 c. c. of sulphuric acid diluted in the proportion of 1 to 6. A glass rod is dipped into the liquid to be tested, and then into the mixture in the test-glass. On moving the stirrer about gently, when the slightest trace of nitric acid is present, red streaks mark the course of the glass rod. Upon the least increase of the amount of nitric acid, the liquid becomes carmine tinted, and the addition of one drop of dilute nitric acid causes the liquid to become a deep red tint in the first case, and then reddish brown. This reaction enables the presence of nitric acid to be detected in commercial sulphuric acid. The author has also observed small quantities of nitric acid in well waters, and the same reaction has shown, most plainly, nitric acid in rain-water after a storm. Hyponitric acid produces the same reaction as nitric acid, sharing in this fact the same defect as most of the other processes employed for detecting nitric acid.—*Chemical News.*

Silk Varnish.—If silk-worms are prevented from forming silk when the time for doing so has arrived, the matter stored up in their bodies for the purpose thickens, and they ultimately perish. The Chinese, however, utilize this material, forming of it a beautifully transparent varnish, which preserves paper from moisture and the devastation of insects. To effect this they throw into warm water those portions of the insects in which the silk is secreted, in order to extract it; after which the water containing it is evaporated. They make another use, also, of this material. Before it is dried up in the organs which secrete it, they form of it a thread far stronger than that of the silkworm, and quite impermeable to and insoluble in water. It is used chiefly for that portion of a fishing-line on which the hooks are mounted.

Talk in the Studio.

Photo-Relief Printing.—According to the announced arrangement at the next meeting of the Photographic Society, to be held in the Architectural Gallery, Conduit Street, on Tuesday evening next, Mr. Woodbury will describe and give a demonstration of the operations in his photo-relief printing process, and exhibit many illustrations of its recent improvements.

Printing by Development.—In our recent experiments with Messrs. Bovey and Rivot's paper for development printing we ought to have stated that we used the paper dry in the exposures to diffused light for about a minute. Mr. Bovey informs us that the best results are obtained when the paper is used wet, and that then an exposure of a few seconds only is necessary. By a modification of the preparation he has obtained a degree of sensitiveness sufficient to give a good print after an exposure of one minute to the light of a paraffine lamp. In the course of an extensive series of experiments in development printing Mr. Bovey says he has been able very satisfactorily to confirm the theory that we recently put forth as to the cleanliness, brilliancy, and perfection obtainable in developed prints when a very short floating on the silver bath is given.

Photography and the Velocipede.—It has already been placed on record that Nicephore Niepce, one of the originators of photography, was the inventor of the velocipede, and the votaries of the first are distinguishing themselves in connection with the last. A few days ago Mr. John Mayall, Jun., son of the well-known photographer, accomplished the journey from London to Brighton on one of the new two-wheel velocipedes. He was accompanied by two friends, Mr. Spencer and Mr. Turner, also on velocipedes. They had a preliminary run round Trafalgar Square, and then started off at the rate of eight miles an hour on roads which proved to be generally good, but against a very strong wind all the way. They kept pretty well together as far as Crawley (thirty miles), after which Mr. Mayall took a decided lead, and arrived in Brighton in time and in good condition for dinner and the second part of Kuhe's concert at the Grand Hall. Part of the journey—downhill from Clayton to Brighton—was run at the speed of one mile in four minutes.

More Piracy.—A few days ago, at Southwark Police Court, John Benjamin Walker, dressed in the garb of a butcher, was placed at the bar before Mr. Partridge, on remand, charged with unlawfully selling copies of "My First and Second Sermons," "Waiting for the Verdict," "The Acquittal," and several other valuable copyrights of pictures, designs, and engravings, the property of Mr. Henry Graves, printseller and publisher, 6, Pall Mall, well knowing the same to be unlawfully made. Mr. G. Lewis, Jun., appeared to prosecute; and Mr. Chipperfield for the defence. It was stated that on the 10th, Mr. Samuel Bennett, a picture-frame manufacturer, was fined at this court £100, or twenty months' imprisonment, for selling twenty photograph copies of the prosecutor's pictures and engravings, and in default of payment was committed to Horsemonger Lane Goal. Since then information had been given to Mr. Graves which caused the prisoner to be apprehended on a warrant on Thursday, the 18th. Evidence was adduced of the prisoner having offered, at a very low price, photographs of some of the engravings, the copyright of which was claimed by the prosecutor, to a Mr. Bennett, telling him at the time that he was a butcher, and had bought them as a job lot. On the application of Mr. Chipperfield, Mr. Partridge consented to remand the prisoner on bail.

Business Change.—We learn from a circular that Mr. Heisch is retiring from his connection with the business of Murray and Heath, his duties as Professor of Chemistry at Middlesex Hospital making too serious demands upon his time to permit attention to another absorbing business. The business now passes into the hands of Mr. R. C. Murray, son of the original partner in the firm. Mr. Robert Murray has been practically brought up in this establishment, and has for many years been favourably known for his obliging habits and intelligent attention to the business. In the future management of the establishment as his own we wish him every success.

The Whole Art of Photography Exposed by Mrs. Mucklewham to Jean M'Cracken.—[A correspondent sends us the following "clipping" from some unknown source. To those who are sufficiently familiar with the "Doric" to follow Mrs. M'Cracken, the description will be amusing.] — Aweel, Mrs. M'Cracken, do ye ken, as yir looken at my Sandy's pictur, it pits me in mind o' the day it was dune; and if ye hearken, I'll tell ye hoo I fand oot a' about the way potygrafers mak portraits! Aweel, as I was telling yee, oor Sandy took a notion he wud leave me his likeness before he gaed awa to the Crimea tae fecht thae ugly bears o' Rooshians, do ye see. Aweel, after my Sandy had fand oot wha was the best haun to do the job, we baith gaed to Mr. ——, in Glasgow, as he was highly recommended tae us by every budy as bein the best haun at makin potygrafys. Aweel, up the stair we baith stappit, and I assure ye we were shown intae a very palace o' rarity an' beauty. I had aye a hankering tae see some o' thae places, and really I was indeed dumfounert and astonished when we got into the wunnerfu' establishment, crooded wi folk lookin at thousans o' picturs; and they're no dear aither, whan I think o' the pleesure it gies me tae look on my Sandy's livin' image whan he's far awa. Ah! Jean, woman, every time I look on that pictur it sens thro' my heart a new glow of warmer love than ever for my dear Sandy, as he was aye a guid man tae me. Aweel, as I was tellin ye, my Sandy made choice o' a big patent pictur, and ye may guess I was unco proud he thocht sae muckle o' me. Weel ye ken, Jean, I was aye curious to find oot hoo things was dune, and I was determint to watch hoo Mr. —— made my Sandy's pictur; sae this is the way he did it: he made my Sandy sit doun in a braw chair, and jammed his pow intae a fork thing that stood ahint him, then telt Saudy tae look unco pleesent, and not tae move; then he gaed to a wee box thing that stood on a three-leggit stuile about twa yards awa, and took a black cloot up at the end o' the box and covert his heed wi't, then keekit thro' a thing like a spyglass at my Sandy sittin lauchen, wi' his head jammed; syne he gangs intae a wee dark room beside the spy-box, and shut himsel in. Aweel, what do ye think, Jean, I slippit owre to the spy-box tae get a bit keek, and see what I could see; but I saw naething ava—the spy-box was clean tume. I was just in time ta sit doun in my chair, when oot cam Mr. —— frae the wee dark room I telt ye o'; and then he took out frae below his coat a thin-looking black case, and slippit intae the keek-box; then, lookin at my Sandy, he tells him to gie a bit smile, and jist look intae the spy-box frae whar he was sittin. Aweel, my Sandy did as he was bid—ay my Sandy aye did as he was bid, and never thwartit me in ony thing I wanted; he was aye a guid man ta me, Jean. Weel, Mr. —— seeing my man smile sae nicely, he took aff a wee brass lid frae the keek-box, jist for about three seconds o' time, and clappit on the lid again, then took out the black case and slippit in below his coat again, and jumpit intae the wee dark room wi't, as fast as Sandy aud me could wink. I watcht him weel, and as soon as he was oot o' sicht, I slippit tae the keek-box again tae see what he had dune, and saw naething but darkness. I began tae think there was something no canny in sic wark. I had jist time tae sit doun again whan Mr. —— cam oot wi' the very pictur ye haud in your haun, Jean, the very livin image o' my Sandy. I laughed till the very tears cam tricklin ower my cheeks at seein my Sandy smile at me in the pictur; but a' the time Mr. —— didna ken I keekit in his box; and noo when I saw a' his airt o' makin potygrafys, it convinces me the mair there is some dark agent assistin' in the concern, and dinna believe a word o' what potygrafers say aboot the picturs bein' took by the licht o' the sun; na, na, they're a' dune by the darkness o' the deil, Jean, believe me. As I watcht, it was a' dune in the dark, and in hiddlins tao; and I'll tell ye, Jean—but ye munna tell ony ither body—the fac is that the wee black case that Mr. —— pits intae the keek-box had an imp or some wee deil in't wha sat sketchin my Sandy's likeness in the keek-box, their's nae doot about that; for I've heard o' printer's deils, and depend on't there's penter's deils tae.

To Correspondents.

Lytles Studio.—You will find two good recipes for making negative varnish in our Year-Book for 1867, and various other recipes in different volumes of the Photographic News. Turpentine and Canada balsam will not answer at all. White hard varnish thinned to a proper consistency with spirits of wine or methylated spirit sometimes gives a good varnish. Two ounces of gum sandarac and 1 ounce of shellac in a pint of methylated spirit will sometimes give a good varnish. But we never recommend amateur varnish-making to our readers. So much of success depends on the use of a good varnish, and it is so difficult for an amateur always to succeed in producing a good varnish, that the risk is too great to run. The quality of the resins and solvents, and other circumstances not under the control of the amateur, all materially affect the final issue. It is better economy to purchase a good varnish ready made.

H. S.—The print you enclose is altogether unsatisfactory. You must, we fear, have made some mistake in preparing the collodio-chloride. Judging from the print, we should think that you had omitted the greatest proportion of the chloride of strontium. What is the appearance of the collodio-chloride after mixture? Is it opaque and white, or bluish and opalescent? Are you sure that the chloride of silver is not precipitated? This sometimes happens if the manipulation in mixing is carelessly performed. In any case remember that it ought not to be used on albuminized paper at all; and the fact that you are able to get an image by applying it to salted albuminized paper at once shows that it is not the right thing. The collodion seems to be somewhat too thin.

H. W.—It is quite impossible to tell how much salt it will require to throw down a bath, without knowing, at the same time, how much silver there is in it. The 4 ounces of silver of which the bath was originally made may have dwindled to 2 ounces or to 2 drachms. Begin by supposing it to have dwindled to 1½ ounces, and add about ½ an ounce of common salt. After agitating it, allow it to settle; then take a small portion of the solution, and add a drop at a time of a 10-grain solution of common salt. So long as this produces a fresh precipitate of chloride of silver more salt is required, and some idea may be thus formed of the amount. Avoid adding excess of salt, as a strong solution of salt will redissolve a small portion of the chloride of silver. Finish the precipitation with a little hydrochloric acid. Pure chloride of silver is worth about 3s. 6d. per ounce. We cannot here recommend any special refiner.

Anxious.—We fear that there is still some misunderstanding as to the preparation of collodio-chloride of silver. You appear to be mixing up two distinct sets of instructions. You describe getting the collodio-chloride in two solutions of Mawson and Swan; and then you proceed to speak of dissolving silver in water, adding it to alcohol, and mixing according to the instructions on the bottles. If you get the collodio-chloride of silver in two solutions you have nothing to add, but merely to mix these two solutions according to instructions; but if you wish to make the collodio-chloride according to the instructions in our Year-Book, then you have nothing to do with the two solutions just referred to. All that is then required is plain collodion and the other preparations mentioned. Ordinary crystallized nitrate of silver will serve, and good methylated spirit may be used. Mixing the chloride solution with the collodion too hastily will sometimes cause precipitation. 2. Much depends on the size of the enlargement required. As a rule, we prefer the transparency enlarged a little as well as the negative. 3. Although you may have some evaporation between exciting and developing, it is not the free nitrate of silver which evaporates, but the water. Under ordinary circumstances, therefore, no fresh silver need be added. 4. The plan of keeping wet plates in a water-tight box with distilled water has been proposed, and has been said to answer well. We have not tried the plan ourselves. 5. If a wet plate dry completely during exposure, the free silver will crystallize on its surface, and spoil it. 6. Cyanide of potassium keeps well in solution if properly corked. 7. The suggestion for two baths, or a double bath, in tents, may be useful. We will note it. We should prefer two dark slides under the circumstances named. 8. The name you mention is a very old one, long out of business; we can form no idea of the lens from the name. 9. For the general purposes named, decidedly No. 1; for landscape, No. 6. No. 1 will work more rapidly than No. 5, and give equally good results.

R.—The print you describe, with the title "Behold, I stand at the Door and Knock," is a well known copyright picture; photographs are piracies.

A Juvenile.—It is probable that the collodion employed in making your collodio-chloride is too horny and repellent. This renders toning difficult, because the film repels the aqueous solution. The same cause will make the film split when dry. The latter fault is often due to the collodion containing the nitrate of silver having been kept a long time mixed. The action of the nitrate of silver on the collodion causes the film to split very readily. We prefer the collodio-chloride mixed at once, instead of being long kept in two solutions. Your best remedy is to prepare it for yourself, first procuring either suitable pyroxyline or good plain collodion.

An Amateur.—If you had sent us an example of what you regard as a defective vignette we could have told you how to avoid the defects; or if you had sent an example of the kind of effect you desire to produce, we could probably have given you the requisite hints; but we are not quite apprised by your description of what the effect is which you desire. We can, however, give you one or two general hints which may serve you. The first requisite in securing a good vignette, without a formal dark oval form round the figure, is a negative suitable for the purpose. The background for a vignetted picture must be much lighter than is desirable for an unvignetted portrait. A vignette mask should then be made to suit each individual image. An aperture of the general form required is cut in a piece of card, and to the edges of the aperture a little cotton wool is attached, and this is gently pulled out so as to admit a graduated light, which will give the form of vignette required. 2. A toning bath should be kept in the dark. If kept in the light it will generally precipitate the gold. As a rule, an acetate bath kept in the dark will keep well; but many causes will occasion it to precipitate, and none sooner than touching it with unclean fingers.

M. Balque.—The tendency in the collodion to dry and repel the solution is generally due to the quality of the pyroxyline giving a horny repellent film. Age will cure it; and it is probable that adding a drop or two of distilled water will be useful. The result you describe was due to adding too much. There is no other safe remedy but trying a fresh sample. Agitating the collodion with a little powdered carbonate of soda, and, after allowing it to stand for a day or two, carefully decanting it, will decrease the repellent character of the film, but at the risk of causing fog.

J. E. Ryan.—The spots on your plates caused by working a new camera most likely proceed from particles disengaged by the friction of the slide; which, being new, does not probably work so easily as an old one. The fact that the same chemicals give no spots in an old camera seems to determine the camera as the cause, and the certainty that it is free from dust—or, at least, perceptible dust—and quite light-tight, leaves little room for doubt. Examine carefully whether rapid moving of the slide up and down disengages small particles of French polish, or anything else.

W. C.—We do not see any cause for alarm in the solution you describe turning brown. By the plan you adopted you made a dilute solution of albumen in water, and to this you added nitrate of silver, and then exposed the whole to light; as the colour assumed by albuminate of silver when acted upon by light is brown, the particles in the solution naturally became brown. So far as we can see, you have no reason to fear any imperfection in the paper. The discolouration produced by nitrate of silver when hypo is present would take place without the action of light, and would be of a dirtier, darker colour. We will, however, when we have time, test the paper again.

Kent.—Thanks. We will duly record your offer.

H. C. S.—We cannot speak from personal knowledge; but think, however, that it is probable you may make the purchase with tolerable safety.

Veritas.—The matter is not worth pursuing further. We corrected the error, and that was our only aim. Our contemporary's rudeness and personality did not make his error right, nor does his assumption of "honest indignation" make that rudeness any more respectable. It is a suspicious circumstance when a man parades his "honesty" as an excuse for his coarseness.

W. S.—We have never heard of any accident, and we should not hesitate to use our best lens: but you can easily test if there is any degree of heat to cause risk by examining on the less valuable lens.

B. J. Edwards.—Received just as we were going to press. Thanks; in our next.

J. Wood.—Thanks. In our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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HERR ALBERT'S NEW MECHANICAL PRINTING PROCESS.

We have just received some important information regarding Herr Albert's new printing process which will be read with the deepest interest by all who have had an opportunity of seeing the wondrously fine results it produces. The process is, it appears—as some have already conjectured—analogous to that of Tessie du Motay and Mareschal.

A correspondent in Paris writes:—"I have been able today to get some information about Albert's French patent, which, although not complete, may interest you," which it assuredly does.

The details, briefly stated, are as follows:—A thick plate of glass, about five-eighths of an inch in thickness, is used for receiving the printing surface. The glass is coated with the following preparation:—

Filtered water	300 parts
Albumen	150 „
Gelatine	15 „
Bichromate of potash	8 „

The glass coated with this solution is dried, and a piece of black cloth placed behind it, after which it is exposed to light for some time—our correspondent thinks about two hours. Next a coating of gelatine and bichromate solution is applied. It is stated by our correspondent as follows, but there is clearly some error in proportion:—

Gelatine	300 parts
Bichromate	100 „
Water	180 „

It is evident that an error is made in stating the amount of water, as the gelatine and bichromate could not be dissolved in so small a proportion; it is probable that one figure has been omitted, and that instead of 180 parts, 1,800 should be read, as with the latter proportion of water a workable solution could be made. The plate is coated with the solution of gelatine and bichromate, dried, and exposed under a negative, care being taken to secure direct rays. After sufficient exposure the plate is washed, is then treated as a lithographic stone—that is, it is coated with a fatty ink by means of a roller—and impressions printed by means of a lithographic press.

In order to make the general subject clearer it may interest and aid our experimental readers if we say a few words in explanation of the process of Tessie du Motay, and the principle upon which his and that of Herr Albert are based.

A plate is covered with a solution of gelatine and a chromic salt, dried, and exposed under a negative. It is then washed in cold water, not with a view to remove any portion of the gelatine, but simply to get rid of the chromic salt and to permit the gelatine to become saturated with moisture, which it will absorb in the inverse ratio of the action of light; that is, the portions of the gelatine coating which have been very fully exposed—such as the deepest shadows of the image—will have been rendered insoluble and impermeable to water; those parts upon which the action of light has been less complete absorb water in just such degree as they have been rendered partially insoluble and impermeable; whilst the parts completely protected from light absorb water freely. This film, after treatment with water, is just in the condition of a moistened lithographic stone. If a roller charged with greasy ink be applied to its surface the ink will be repelled by the moist portions, but will adhere to the dry or insoluble portions, as it would to the greasy image on the stone. The ink adheres to the image in the exact ratio of its freedom from moisture. In the deep shadows, where light has acted fully, the film having become quite insoluble and unabsorbent, the ink adheres freely; to the parts partially moistened it adheres less perfectly; and so on in exact relation, the action of light on the film being registered by degrees of impermeability or permeability to moisture, and these degrees of permeability again registered by the reception or rejection of a fatty ink applied to the surface. An exact transcript of the negative is thus secured in printing ink on the layer of gelatine, and, a sheet of paper being placed upon it, and suitable pressure applied, a print is produced.

The peculiarity of the print so obtained is, that the gradations from light to dark are not produced by means of a perfectly continuous tint, but by an exceedingly fine granulation, caused by the mode in which the moistened gelatine receives and repels the ink. In Tessie du Motay's prints this grain, although finer than the most delicate lithographic grain, is still apparent. In some of those of Herr Albert it is so fine that when examined under a glass it becomes doubtful whether the grain belongs to the image or to the texture of the paper. The drawback to the process of Tessie du Motay was the fact that the soft tender surface of moist gelatine was quickly injured by the process of mechanical printing, and not more than from fifty to seventy copies could be obtained from one printing surface. Some improvement has, apparently, been recently effected, for we hear of the issue of a work in Paris illustrated by this process, and that upwards of two hundred impressions were produced from one prepared surface. By Herr Albert's process it seems that considerably upwards of a thousand impressions can be obtained from one plate. Whether this be due to the first preparation with gelatine, albumen, and bichromate, or to some other at present unexplained cause, we cannot say.

In the specification of Tessie du Motay's patent great stress is laid on the use of trichromates and some other salts as sensitizing agents. Whether these are essential to the satisfactory working of the process or not we cannot certainly say, but we suspect that they are not. One thing is quite certain, that the principle of printing in this way is not protected in this country, and, little as it has been recognized or understood, it is not new. In M. Poitevin's first specification in relation to photolithography, taken upwards of thirteen years ago, it is distinctly described. After stating the mode of preparing a surface with gelatine, albumen, or similar body, and a bichromate, and exposing it to light, he says: "It is then moistened with water by means of a sponge, and, while moist, the greasy ink or matter is applied to the surface by a ball or dabber, or by a roller or press, or otherwise, and will be found to adhere to those parts only which have been affected by the light." This method has long been public property, and although improvements in detail may be legitimate subjects for patent, the principle is free to all, and certainly merits more of the attention of experimentalists in this country than it has yet received. We shall shortly return to the subject, and give some practical details of the method employed by M. Tessie du Motay, for the guidance of those disposed to work in a similar direction.

The high excellence of Herr Albert's results satisfactorily shows that he has mastered all the conditions of success. How much may be due to individual manipular skill, or how much to the modifications introduced into the process, remains to be seen. Meanwhile the question is anxiously asked in many quarters: How is the new process to be introduced and made commercial in this country? Is it to be protected by patent, or to be worked secretly? Is it suitable to small establishments and general photographic work, or is it chiefly fitted for the printing of work for publication, book-illustration, &c.? To these questions we cannot at present give a certain answer; but we shall keep our readers fully informed of the progress of events.

MR. SARONY'S NEW PHOTO-CRAYON PORTRAITS.

The general admiration expressed for the examples of Mr. Sarony's new style of portraiture at the meeting of the Photographic Society on Tuesday evening was strongly confirmatory of the opinion we expressed last week as to the beauty of the results and the favour with which such pictures are likely to be received both by photographers and the public. Amongst the many beauties the style possesses, the singular and almost inexplicable softness of the pictures met with much appreciation. One important source of this softness is, as we pointed out in our last, the roughness of the surface of drawing-paper upon which the transparent image rests, producing absolute contact in myriads of points, and imperfect contact in all the small spaces between: thus, as the Rev. J. B. Reade happily phrased it, permitting the image to be superposed on its own shadow, increasing depth and softening asperities.

There is another element of excellence in such pictures which is worth remembering: they are very permanent. Developed collodion images are, so far as we have evidence at the present time, free from any tendency to change or instability, and, preserved with ordinary care, these pictures will probably possess a very long tenure of permanency.

As we explained in our last, the image is a transparency enlarged from a small negative. The important point in the character of the transparency is, that it shall be thin, delicate, bright, and clear, so as to form a good picture when backed up and viewed by reflected light. In producing it, the idea must be constantly kept in mind that a picture to be *looked at*, not to be *looked through*, is required. The quality of image, in fact, is needed which answers best for Eburneum pictures or transferred collodion prints.

It is an imperative condition that there shall be no trace of fog; the highest lights must be perfectly clear bare glass; and from that the more gradation, of course, the better. Many photographers are already familiar with methods of obtaining fine transparent positives of good tone. The formula we gave in our last volume, in the Eburneum operations of Mr. Burgess, will be found to give excellent results; but as nothing can exceed the beauty of the examples which Mr. Sarony has brought under our attention, we subjoin his mode of working.

A good commercial bromo-iodized collodion is used; one which is tolerably ripe will answer best, and if any tendency to deposit on the shadows is present, the addition of a little tincture of iodine to the collodion will be found useful. Excite in a strong bath containing (say) from 35 to 40 grains per ounce, slightly acid with nitric acid. There is one sentence in the printed instructions which is very pregnant: it is remarked that "the time of immersion should be short." In this remark is the recognition of the principle we recently pointed out in regard to the action of unchanged haloids in the film in the wet process. Dry-plate workers have for some time recognized the fact that the presence of unchanged bromide in the film is of the utmost importance in securing clean development and the absence of fog. We have since pointed out that the same principle obtains in development printing on paper and in the production of images on wet collodion. A short immersion, which leaves a portion of the iodide and bromide unconverted into salts of silver, is the essential condition of brilliancy and freedom from foggy deposit. The utmost attention should therefore be given to this point in producing the transparencies under consideration.

The mode of working the camera need not be repeated here, but it may be remarked that, as a vignette only is required, a very small stop need not be used. The vignetting may be effected in many ways. A vignette-glass placed in contact with the negative affords an easy means of producing a satisfactory effect; and if it be skilfully supplemented by cotton wool or tissue-paper, to vary the form of aperture and gradation so as to best suit the subject, a very good effect may be produced. A moderately full exposure is desirable. The developer consists of—

Pyrogallic acid	1 grain
Citric acid	1½ grains
Water	1 ounce
Alcohol	*quantum suff.*

Great care must be exercised not to carry the development too far, as over-development causes the detail to appear buried, and only visible by transmitted light. Fix with hyposulphite.

In some cases, if the chemicals are in good condition and the development is rightly managed, a picture of good quality and satisfactory colour is produced without toning; but in most cases some toning will be necessary. Various methods are possible, few exceeding gold toning if properly managed. Mr. Sarony's method consists in the application of a solution of 10 grains of bichloride of mercury and 10 grains of chloride of ammonium in an ounce of water. After a uniform grey tint is produced by this solution the plate is washed, and a solution of hyposulphite of soda of about 5 grains per ounce is poured over the picture, a good black being the result. The progress of toning can be examined, as we have before described, by bringing a piece of wet white paper into contact with the film. When the right tone is produced, wash, dry, and finally varnish.

The varnishing will be found to add much to the brilliancy of the picture, and will generally remove a slightly dead, opaque, smoky effect, which is present in the transparencies produced by some samples of collodion.

A great variety of tones may be produced by what Herr Grune has called the transformation of the metals. We cannot, however, enter into detail on that part of the question here.

DIRECT CARBON PRINTING.

The following mode is simple, and the excellence of its results only limited by the excellence of the negatives:—

1st. Flux the negative in the kiln.

2nd. The negative fluxed, wax, collodionize, and gelatinize.

3rd. Coat the negative with pigmented gelatine.

4th. Solve out the free gelatine.

5th. Affix, with Russian glue, to paper or other support, the developed picture, and lift it from the negative.

The resulting product, in softness, detail, depth, and transparency, is scarcely equalled by any other method.

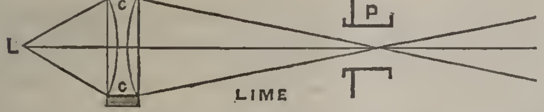
G. de M. L.

ARTIFICIAL LIGHT FOR OPTICAL PURPOSES.

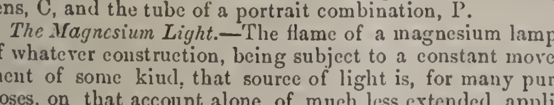
BY D. WINSTANLEY.

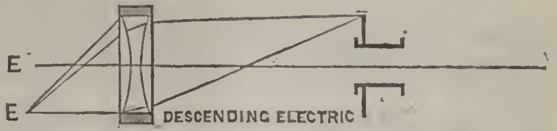
Attention is being continually and repeatedly directed, first by one and then another, to each of the varied examples of artificial light, in the category of which are comprised the lime, the electric, the magnesium, and, I think I may add, the phosphoric, lights. It is somewhat difficult to obtain a thoroughly reliable comparison of the merits of the various lights, inasmuch as those who have had experience of these matters are frequently more or less tempted to withhold or only partially disclose the information they possess on this subject. In the following remarks, however, which comprise, amongst other things, a brief criticism on a variety of apparatus for the production of artificial light, of which apparatus the writer believes himself to be the introducer, truth will be a paramount object, and what little is said will be, so far as the writer is able to make it, perfectly reliable and strictly veracious.

Respecting the Lime Light.—As the jet from which the mixed gases issue is subject to no cause of local variation, the ignited portion of the lime exposed to the action of the gases discharged from it, having but little to determine its position beyond that of the direction in which the gases are projected upon it, is almost entirely motionless; and consequently, when used for what are known as "optical purposes" (*i.e.*, when placed before the condenser of a magic lantern or enlarging camera), the direction of the rays proceeding from it remains constantly the same, and any ill effects which would result from a change of this direction are not experienced. Moreover, the cost of the gases and the apparatus, and attention necessary to use them, are such as to place this source of light for many purposes quite within the pale of commercial possibility. In the figure here given, L represents the position of the ignited point of lime and the lines proceeding from it, the direction taken by the rays proceeding therefrom through the condensing lens, C, and the tube of a portrait combination, P.



The Magnesium Light.—The flame of a magnesium lamp, of whatever construction, being subject to a constant movement of some kind, that source of light is, for many purposes, on that account alone, of much less extended applicability than the lime light. The two points, M M, in our figure are intended to show the extreme points occupied by the moving flame in the American ribbon-burning lamp. The rays proceeding from them give an idea of the direction taken through the condenser and the portrait tube, from which it will be seen that the focal point is constantly altering its position in the tube of the portrait combination, from which, if of less proportionate size than given in the diagram (all else being the same), the light would be cut off at intervals occurring with some amount of periodicity. This, however, is not a fatal objection to the use of the magnesium light, inasmuch as its flame is, during every minute it lasts, located in some position whence the light proceeding from it may be made available. The cost of this metal, however, in spite of all the remarks of advertisers, makes that source of artificial light, when compared with the lime, enormously more expensive; and when the light is to be used frequently and for prolonged intervals in one place, the lime will certainly be found vastly more economical.





The Electric Light.—Seeing that this source of light occurs at, and not between, the carbon terminals of the battery, the light itself is practically not one emanating from a point, but is attended with such disadvantages as would arise if it proceeded from the entire area of a circle equal in diameter to the distance between the highest illuminated portion of the upper carbon and the lowest illuminated portion of the under one, which, however, for such purposes as photo-enlarging, lantern exhibiting, &c., amounts, in practice, to nothing, in any way perceptible, even when the light is produced by one of Wilde's powerful machines, under which latter circumstance the distance between the carbons is at its maximum. When, however, the electric lamp (as the regulator of the carbons is technically called) is adapted with a mechanical movement to only one of the two pencils, the spark will be a constantly descending one, and, as an automatic arrangement, is emphatically of no use whatever for photo-enlarging or lantern purposes; as, in such an instance, the focal point gets higher and higher until at length it is entirely outside the tube of the portrait combination, to which it can only be returned by personal attention to mechanical appliances specially provided for the purpose. This, however, is not a fatal objection to its use, but it is nevertheless one which every conscientious lamp manufacturer ought to mention in connection with his wares. The wear and tear of zinc plates, the trouble of cleaning out the cells of a battery, and the constantly diminishing force of the current produced by such means, places voltaic electricity, as a source of artificial light for commercial purposes, infinitely lower in the scale than magnetic electricity, and decidedly lower, not only than the lime, but also than the magnesium light.

The Phosphorus Light.—This source of artificial light, which, in a workable and continuous form, the writer has had the honour of introducing to the public notice at one of the meetings of the Manchester Photographic Society, holds out reasonable hopes of being utilized, at least for some commercial purposes. The apparatus as exhibited at the meeting alluded to, although in an imperfect—and, by the bye, to some extent, a dangerous—form, yielded an aggregate amount of light which was considered, by the gentlemen to whom it was exhibited, as more extensive than the lime-light as produced under ordinary circumstances. The enormously large area, however, over which this light extends, although it does not render it unavailable for optical purposes, does render the amount so utilizable a minimum of the amount produced, and for this reason the writer does not intend to use, and certainly will not recommend, his own apparatus for optical purposes. No exact determinations of the comparative intensity of this light have, however, as yet been made, and definite figures in reference to it are therefore at present unjustifiable. The writer's candid opinion on the matter (and of the value of that opinion the Editor of this Journal is, to some extent, in a position to judge) is, that this light may be produced, in proportion to the amount of illumination it will afford, at a rate of cost decidedly to its advantage when compared with the lime light. Its failings and its advantages, the precautions to be taken in regard to its use, the apparatus by which it is to be obtained, and the results which may confidently be expected from it, are subjects to which attention will be directed at some future date.

CRACKED NEGATIVES.

BY B. J. EDWARDS.

I have lately observed several letters in your columns from correspondents who have suffered from the cracking of negative films. As "prevention is better than cure," allow me to remind them of a plan by which the evil may in future be avoided.

Some time since I found that many of my negatives, which were kept in the ordinary grooved boxes, were hopelessly ruined by cracking of the film; in fact, I was never sure of finding a negative safe. I have therefore, for the last two years, adopted the plan of storing the negatives in paper parcels, placing a piece of blotting-paper between the plates, and replacing the latter as soon as they leave the printing-frames. None of the negatives kept in this way have cracked, while others kept in boxes in the same room are quite spoiled.

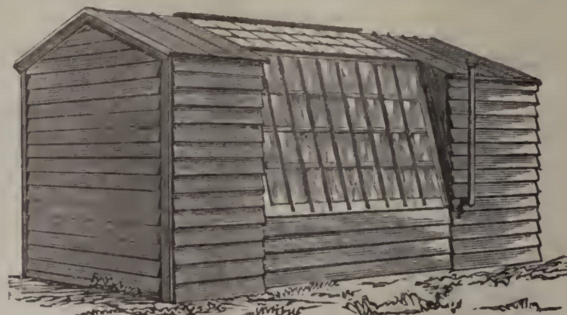
I find the above a very convenient method of storing negatives; the packets—twenty negatives in each—are placed on shelves, side by side, and resting on the edges of the plates. Any parcel may be taken down and replaced without disturbing the others, the numbers being marked on the end of the wrapper. A shelf eight feet long will hold about a thousand negatives.

I should be glad to hear the experience of others of your readers who keep their negatives in a similar way. Has Mr. England tried this plan?

A SUCCESSFUL LIGHT WITHOUT BLINDS.

BY DAVID DUNCAN.

To build a studio of a certain form and size, to light it by so many feet of *clear* glass, and work it successfully without blinds, is not a common nor an easy thing. Much depends upon circumstances: upon the colour of surrounding objects which may reflect lights, and, withal, the height from the ground it may be built on; also whether it is in the town or country, or in the north or south, or east or west quarters of the globe. The skilful portraitist, although endeavouring to render exposure in the camera as short as possible, nevertheless takes care to avoid too much light, well knowing that brilliant, well-modelled negatives are only attainable when the light is *subdued*. Therein lies the difficulty. To build a studio which may be worked without blinds, with just enough light and no more, may answer very well for a certain time on certain days. Hence a commercial portrait studio must needs be built with plenty of light admitted, and, as a matter of course, it is indispensable at times to soften or subdue it by means of screens or blinds, photographic or actinic light being of all things the most variable. Therefore, to select a certain spot or eminence, and build a studio accomplishing desirable results, without the aid of—shall I say?—artificial lighting, beyond that which the studio itself affords, requires judgment and no little experience on the part of the designer. The writer feels that he has not an unpleasant task in recording such an achievement, and hopes he will be pardoned for introducing it in the form of an article, believing it cannot fail to interest photographic readers generally. The following is one of those rare successes which crown the efforts of the earnest devotees of our beautiful art; not one of those things stumbled upon by accident, albeit the result of speculation, which waits on experiment. Mr. W. R. Howell, of 867, Broadway, New York, the proprietor of an excellent photographic establishment, had an appointment last fall to photograph each of the students of the University, likewise the Theological Seminary of Princeton, New Jersey, a small but pleasant country town, fifty miles from New York. There were about five hundred students to photograph, and nothing less than one thousand negatives to make. It was therefore necessary to build a temporary glass house for the purpose, which proved eminently successful. An idea may be formed of it by the following sketch:—



Length 28 feet, breadth 14 feet, height 11½ feet; sloping each side from the top to 10 feet. The studio had but one side-light, which was 12 feet by 8, and, as will be seen, sloped in from the perpendicular line 18 inches. The top-light, which was also on one side, was 12 feet by 6, facing north. It was built in the grounds of the University, in an open space; the three colleges, east, west, and north, were completely surrounded with trees. America is nearly everywhere luxuriant with vegetation. In fact, many of the streets in New York have trees on each side, their branches intertwining in the centre of the road, forming an arch for the carriages, &c.; but Princeton is thickly studded. Doubtless the surrounding trees and reflection therefrom contributed much towards subduing the light. We made from twenty to thirty sittings a day, on an average, taking two or more negatives of each person. Thus it was brisk work. There was one trouble, however, which we were free from, viz., that of cleaning plates; there was none of that incessant rubbing, and re-rubbing, and breathing, so common to many photographers, Mr. Howell always thinly coating his plates with albumen, as I have recommended in a previous article. There was nothing novel, either in the collodion, bath, or developer.

The following may be amusing:—A committee formed of students undertook the management of appointment of sittings, in order to avoid confusion. They attached a card to the door of the studio, with the following written in ink:—

> Notice.
>
> Students will please *keep outside* the gallery while any one is having his picture taken. Gentlemen will please observe this notice!
>
> "We wont do it!"

was a postscript added by one refractory student having a piece of lead pencil in his pocket, and desiring to express his intention. They did not always "keep outside," but gave us little trouble. They were truly gentlemen; in manners and conversation like honest, plain-spoken Englishmen, free from affectation, and did not exalt the letter H by aspiration, as though it were the chief of the alphabet's nobility, but, in their republican spirit, treated it with the same courtesy as the letter G. They were not, however (like all students, I suppose), free from absurdities, excessively fond of a "goak," and at times afflicted with the pun mania. I trust I may be pardoned in lengthening this communication by mentioning one or two. One of their jokes was to sketch the head of a certain professor like a large pear in a dish, and give an order for a number to be copied, which was respectfully declined. They called him "Old Dad," because he ap*peared* like a *pear*-ant. This professor, during prayers in classes, always kept his eyes open. The students considered he obeyed the scriptural injunction; viz., "To watch and pray." They deemed a bachelor photographer, having more than one sweetheart, to be in great perplexity when making collodion, because "how happy he could be with either" (ether)! When making views of the neighbourhood of Princeton, some of the students would accompany us, and crowd round the "dark tent" to know the issue of each exposure; perhaps a late comer would knock outside with his stick, and shout, "Halloa there, Mr. Photographer! how's —— ? "Oh! don't interrupt him," others would say; "the man's *in tent* with a plate." (Groans.) The dark tent within was roomy; I sat on a box and developed over the ground; *i. e.*, not over a trough or sink. Upon developing the first plate, the solution falling upon the grass, which was teeming with grasshoppers, would cause them to fly in all directions, and spoil a plate. When the cause was explained to those outside, and saying that "the developer makes them as scared as though the devil was among them," it was said: Oh! yes; the *devil-hopper* would cause it." (Commotion.) We forgot something important on one journey: "O, here's a go!" said a student to another; "the photographer is like Sam when he made his speech the other day." "Why? how do you mean?" "He forgot his 'stops!'"

I had better cease; but if, after a hard day's work, this communication from the "other side" makes a brother "shadow-catcher" (the jocular term for photos. here) smile and sets him thinking about that important subject of "lighting the sitter," I guess there's no harm done.

ON IMPROVEMENTS IN CARBON PRINTING.

BY M. JEANRENAUD.*

Since the last communication which I had the honour to make known to the Society in reference to the carbon process the *modus operandi* has been much modified, and it is for the purpose of describing a simplification of the method that I give utterance to these remarks. We are already acquainted with the manner of preparing the black gelatinous tissue. Upon plates of glass fixed horizontally are placed sheets of paper which have been soaked in water and afterward drained upon filter paper; the tepid gelatine mixture contained in a teapot whose spout has been somewhat contracted is then poured in parallel lines upon the sheets of paper, the mixture spreading out of itself, and forming an unbroken surface, which is rendered more even by the application of a glass rod or parallel.

At the risk of contradicting my previous instructions, I would recommend the employment of the superior descriptions of gelatine only, or even *grenetine*, a product containing neither salts nor acids; the discontinuance of glycerine, and the purification of the colouring matters used for mixing with the gelatine—viz., lamp black, *purpurine*, carmine, madder, &c.—is also desirable. Prepared in accordance with these directions the sensitized tissue may be kept for a considerable period; I have worked with some which had undergone no alteration whatever after the lapse of a fortnight.

The paper is sensitized in a 3 per cent. bath of bichromate of ammonia, dried, and rolled up ready for use. As to the period of exposure, I may mention that I have often observed that in cloudy weather the sensitiveness of the bichromate is five or six times greater than that of chloride of silver under the same conditions; and that in clear weather—or when exposed to direct sunlight—the difference is even greater, the bichromate being eight or nine—or even ten—times more rapid, according to the transparency of the atmosphere. The time of pose required for chloride of silver being therefore known, it is easy to calculate the necessary period required for the proper exposure of sensitive pigment.

On taking the tissue out of the printing-frame it is requisite, according to the old method of proceeding, to make use of a sheet of india-rubber paper to effect the provisional transport of the latent image in order to proceed to its development, the picture being subsequently again reversed upon a definite basis; this is a lengthy operation, and, at the same time, unhealthy and dangerous in respect to the benzole dissolving the rubber; and, moreover, a costly one. To remedy this time-taking method M. Marion communicated last year an ingenious and expeditious mode of proceeding. He made use of albuminized paper for the first and only transfer of the image, an operation securing great simplicity, but possessing the inconvenience of presenting the picture from a reversed point of view. The latter difficulty may, however, be obviated by subjecting the *cliche* once for all to an operation which I will indicate hereafter.

Without putting forward any pretensions to M. Marion's proposition, I will explain the simple and practical method pursued by M. Chardon and myself in applying the proposed modification. Instead of immediately superposing the albuminized paper upon the tissue, and allowing it to dry in the press, and to coagulate the albumen by a jet of steam, previously to developing the picture, we commence by immersing the sheets of albuminized paper in alcohol of 30° to 40° Cent. for several minutes, and then drying them. It is upon these sheets that the tissue will be transported, developed, and subsequently remain. To perform these operations of transfer a sheet of albuminized paper thus treated is passed through water and then placed, prepared surface upwards, upon a glass plate; the exposed tissue is next taken, and one of its edges having been placed in contact with the albumen surface destined to receive it, the pigment sheet is raised by one hand, while, by means of the other, a metal roller covered with flannel is passed over the back of the tissue, the woollen covering having the effect of regulating the pressure and removing the air-bubbles. By this means the latent image is imprisoned between two sheets, and firmly attached by the very great adhesive power possessed by albumen coagulated with alcohol. The sheets are placed under a press, strong pressure being unnecessary, and the operation of development then proceeded with. Boiling water is requisite to effect the separation of the sheets, but as soon as this result has been obtained the proofs should be put into water of a less temperature, so that the development may be under control; the temperature of the water should be increased according to the requirements of the picture, whether it has been over or under-exposed. The operation should be conducted in the dark room, as under the influence of light the action of the bichromate of ammonia upon the albumen of the support imparts a greenish tint to the finished picture. The print is washed and passed into a saturated solution of alum in water, then again washed rapidly in several changes of water, dried, trimmed, and mounted upon cardboard.

I have alluded to the necessity of reversing the negative prior to its employment: many gentlemen—and among others, M. Marion, M. Woodbury, and, I believe, M. Despaquis—have already indicated methods for removing *cliches* from their support, and, as I have likewise studied the question, I propose to make my remarks on this point the subject of another communication. I may add, that it will be very easy by a modification of the dark slide to obtain *cliches* direct upon glass in the required position.

ON OUT-DOOR PHOTOGRAPHY.

BY GEORGE WASHINGTON WILSON.*

Although aware that there is nothing peculiar in my mode of working, seeing that I use the same wet collodion process for my stereoscopic negatives which I did seven years ago, and which all the world uses now, still, as it might be of interest to some, I have put my formula into shape.

These are the materials and outfit which I use when on photographic pleasures bent:—

Bath.—I use the ordinary 30-grain bath of nitrate of silver, without anything added to it, except about 4 grains of iodide of potassium to every 16 ounces.

Collodion.—As I never could make it to please myself, I always buy it from some respectable maker, and principally from Messrs. Mawson and Swan, of Newcastle, from whom I get it very uniform in quality.

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* Read before the French Photographic Society.

* *Philadelphia Photographer.*

Glass.—Chance's best patent plate, as I find that in the long run it is cheaper to have first-quality glass. It is free from scratches and air-bubbles, and I pay something extra to have it packed with a piece of paper between each plate, to prevent the surfaces being scratched during transit.

Developer.—	Protosulphate of iron	15 to 30 grains *
	Glacial acetic acid	1 ounce
	Water	16 ounces.

The proportions require to be varied so much according to circumstances that it is impossible to give them exact; indeed, I never measure them except by rule of thumb. With a little practice one soon learns to regulate the strength of the iron and acid to suit the work in hand. In warm weather I dilute the developer immediately before using it, and, consequently, can carry in one bottle as much as when diluted would make two.

Tent.—A very light tripod covered with two thicknesses of black calico, and one inner one of yellow. The calico is about twelve inches longer than the tripod, and, when the legs are extended, I place a few stones upon this extra cloth, all around the inside of the tent, to steady it and keep out light. The cloth is also wider than required to cover the extended tripod, and, when I sit down inside, either upon my plate-box or on my heels, my assistant brings the cloth around me, overlaps it at one side, and keeps it there during development, &c. I find this tent the handiest for most subjects that ever I tried. When not in use the cloth is folded round the tripod, and the tent is then placed inside the camera-tripod, and fixed with one leather strap and buckle. These, the tent and camera-tripod, form one parcel of about ten pounds weight, which I have often carried in my hand two or three miles at a stretch. The only kind of work which I find this tent unsuited for is street work. It is often difficult to get a quiet corner free from dust, or *idle men and boys*, where it can can be set up, and although I have used it always in doing my street views, yet it was at great discomfort. For country work, however, there can be nothing better or more easily set up, and, if one takes care to dampen it inside occasionally, I believe negatives more free from pinholes can be done in it than in any developing-box, and it is twice as portable.

Camera.—I have latterly used a sliding bellows-body camera, which takes plates 7 by 4¾, with two sliding fronts: one for single lenses when taking negatives the full size of the plate, and one for a pair of stereoscopic lenses, the flanges of the latter made to fit half a dozen different sized lenses. by means of which are fitted on all the lenses except the largest pair. The box closes up to 2½ inches, and draws out to 8½, and it can be turned on end when taking upright views. It has also a removable centre division, which can be taken out when full-sized plates are used.

Lenses.—With the camera I use, for full-sized plates, a triplet of about 8-inch focus, a pair of view lenses, single meniscus 8-inch focus, one pair 6-inch, one pair 4½-inch, one pair doublets 3½-inch, and one pair doublets 2½-inch. These I carry in leather cases, slung on a leather belt worn over the shoulders like a shot-belt.

Chemicals.—All my chemicals are put up in 16-ounce bottles, and packed in baskets made for the purpose: a large one for carrying a stock, and a small one for holding sufficient for a day's work. The latter, when filled, contains three 16-ounce bottles of sensitizing bath, one of developer, the glass bath and dipper in a wooden case, eight 2-ounce bottles of collodion, three 2-ounce bottles of glacial acetic acid, one 6-ounce bottle of cyanide solution, one dripping-bottle, one 6-ounce bottle of crystals of sulphate of iron, one 2-ounce bottle of crystals of cyanide, a small glass funnel, one gutta-percha funnel, a plate-holder, a small portfolio holding filtering-paper, a dusting-brush, chamois leather, and two towels. All these, although they take long to describe, go into a handy basket, which my assistant easily straps on his back, and balances by the camera in front of him; so that, when we start to the field or mountain, I have the tent and camera-stand in one hand, my plate-box, containing twenty-four plates, in the other, with the lenses, in their cases, over my shoulder, whilst my assistant carries the chemicals on his back, balanced by the camera and two tin cans, one within the other, in one hand.

When we arrive at a point where we intend to work, I immediately unstrap the tent, and set it up whilst my assistant collects a few stones to keep it steady; and whilst I am arranging my bath and chemicals in the tent my assistant runs to fill his cans with water at the nearest source. By the time he returns I am ready to coat a plate, which I always do inside the tent, and, as the plate is getting ready, I place my camera ready to receive it.

If it is a subject we are attempting which can be taken instantaneously, I use my 6-inch focus lenses with a five-eighth inch stop, and expose by removing and replacing the cap of the lens as quickly as possible; but if it is a subject requiring a long exposure, I make a guess for the first plate, and, from long habit, generally succeed in hitting it pretty exactly.

Some days, owing to the variation of the intensity of the light or the amount of shadow in the views, I have begun in the morning with an exposure of ten seconds, and ended in the afternoon with one of three minutes, without losing a plate from either over or under-exposure during the day. In spring the actinic property of light appears to be very active, and it is only then that I have succeeded in getting passable instantaneous pictures. Early in the season views of buildings may be taken with a small stop in from two to ten seconds, and landscapes with trees in from five to fifteen seconds; but by the month of August and September I find from thirty to sixty-six seconds are required for most landscape views, and instantaneous exposures are of no use except for clouds and water.

The plate being exposed, I get myself shut up in the tent, and develop in the usual way, by dashing on the solution as quickly as possible, and moving about the plate to prevent stains. If it is an instantaneous view, all the details should come up slowly and distinctly; but I keep on moving the plate for two or three minutes, so as to get all that I can up before washing off the developer. This I do carefully and slowly, and as the negative in this stage is very thin in deposit, I pour from my dropping-bottle a small stream of nitrate of silver along the side of the plate, and let it flow over the whole surface before dashing on a fresh dose of developing solution, keeping the plate moving as usual. When this has acted for a minute or so I wash it off again very carefully, and repeat the process sometimes three or four times, if necessary, until the requisite printing density is attained; then, after a slight washing, I bring it outside the tent, wash thoroughly, and fix with cyanide of potassium. If the plate has had a long exposure with a small stop, I find one re-development generally enough; but if the plate looks too thin after fixing, I sometimes take it into the tent and re-develop a second time. The cyanide, however, must be well washed off, otherwise there is danger of getting a reddish deposit upon the shadows.

Varnishing the negative I consider one of the most troublesome and delicate duties. The varnish must be filtered and kept free from dust, and, as with my collodion, I keep a few 2-ounce bottles full, and only coat a few plates from each bottle. When one of these 2-ounce bottles of varnish begins to show signs of being in the least contaminated with dust, I pour it into the stock-bottle for refiltration, and take a fresh one. After the first coating, which dries flat, or with a dull surface, I go over the negatives and touch up any small blemishes or pinholes, and finish them with a second coating, which fixes in the touches of colours, and dries with a glossy surface. When the negatives are cleaned on the back with a rag and some spirits of wine they are ready for the printer.

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* This doubtless refers to the number of grains per ounce.—Ed. P.N.

I am not aware that there is anything peculiar in my printing operations, but I may mention that I use what some people consider a weak bath: 25 to 35 grains of nitrate of silver to the ounce of water, and the solution made neutral with a few drops of ammonia. After the prints are fixed in hyposulphite of soda they are put up in bundles of about fifty, and subjected to the pressure of a machine acting on the principle of a screw-press, which squeezes most of the liquid out of them. They are then washed by throwing them separately from one dish of clean water into another several times, and again subjected to pressure; and I believe that after a few repetitions of this process they are as free from hyposulphite of soda as it is possible for prints to be; but I generally allow them to swill in porcelain dishes, with syphons, which empty and fill mechanically all night.

My prints are usually mounted with fresh gelatine, but when used for illustrating books, where thin mounts are necessary, I use india-rubber solution to prevent cockling. The india-rubber is spread over the backs of the prints quickly, by means of a hog's-hair brush, and also over the part of the mount which the prints are intended to cover, care being taken that no part is left uncoated. When both are dry the prints are laid on the mount, and slightly rubbed down by hand, which causes them to adhere partially; then passed through the rolling-press, which causes them to adhere firmly. Any rubber solution on the mount beyond the margin of the picture requires to be brushed off with an ink-eraser before rolling, and unless the paper is very spongy it comes off easily, without leaving any marks; and when the spots and blemishes have been stopped out with lampblack, or any other suitable colour, the prints are ready for the market.

January, 1869.

EXPOSURE, DEVELOPMENT, AND LIGHTING.

BY E. DUNMORE.*

Every good photographer knows the importance of these three essential particulars; would that every photographer knew how to make the best use of them. It is one thing to know, but to put that knowledge to the best practical use is an entirely different matter—so different, indeed, that the most clever manipulator never supposes but that other and finer effects may be produced than the best he has already done.

The difficulty of saying anything new—something that has not already been thoroughly discussed, and therefore exhausted, about these importont matters—is nearly impossible. The marvel is, how so much can be said and written on the same subject, week after week, without being painfully tedious; and great credit is due to our professional brethren and journalists who can, without tiring their readers, find variety in the monotonous sequence of photographic events.

There crops up occasionally an announcement that photography in natural colours has been achieved, and, more than that, made permanent—sufficiently so to aid in book illustration. I have not seen *more* than the announcement at present, but hope some day to see it an accomplished fact. Speaking of colour photography reminds me of an incident. I was looking in at a dealer's window in the Strand, and overheard the following:—"Are not those photographs capital? They have found out at last how to photograph in natural colours (the speaker alluding to those coloured pictures of flowers), and here they are, lifelike," in which sentiment his friends fully acquiesced, quite satisfied that the colours were produced in the camera simultaneously with the outline. But I am afraid we must wait a little longer before we shall see pictures for sale whose chromatic effects are due to the direct action of light, and are not merely coloured imitations of nature, though both are photographs in natural colours. Such announcements considerably mystify the uninitiated, as they do the adept, until he satisfies himself of their true nature by a personal inspection.

Why so much can be said, and is said, on the different processes we use, without being mere repetition, proves the astonishing variety of modification each department of photography is capable of undergoing. The seemingly simple operation of development is a variety in itself, full of interest to the thinker who ponders over the why and wherefore of this and that effect. It even forces a certain amount of thought from the rough and unscientific man, who only knows that the application of a certain solution to a sensitized and exposed plate will make an image "come out." If it comes out perfectly opaque in the light, and clean and transparent in the shadows, he is quite satisfied that he has obtained complete success—the *ultima thule*—and has landed the "right thing." It rarely happens that two photographers will, under the same circumstances and with the same materials, produce the same effects—so much depends on judgment and taste. When we review the scale of quality, from the lowest commonplace to the highest and most refined production, we involuntarily exclaim: Can judgment and taste make all this difference? Surely some secret dodge—some incomparable formulæ—helped to make these beautiful effects! The poor iron developer is almost grudged the credit of being equal to the task, and a well-schooled and refined judgment considered only as a help, and not as the ruling power. So anxious are we to attribute the success of others to chance and chemicals, and, as some term it, luck.

The developer being such an important matter, we will give it the first consideration. When our negatives bloom out gradually and evenly, until every detail is apparent in the shadows, and the highest lights are sufficiently opaque, we congratulate ourselves upon having hit the right and most desirable formula. The proportion of each chemical bears a proper relation to its fellow, and the process throughout works harmoniously and pleasantly. The developer that will give the greatest range of tone, other things being equal, is the developer *par excellence.* Range of tone depends in a great measure on the *fineness* of the deposited silver that composes the image, and is somewhat independent of strong or weak solutions. We all know the former produces softer and the latter pictures with greater contrast; still, neither of them will produce perfect results unless the deposited metal is in a state of the most minute division—the finer the better. The colour of the negative depends entirely on the quality of the deposited silver. The finer the deposit the more non-actinic the colour, therefore possessing the power of producing greater range of tone; if the deposit is coarse there is always a loss of detail in the shadows of the prints, the more attenuated layers not possessing sufficient force to obstruct a proportional amount of light. However they may appear on the negative, this is the reason why, frequently, a negative will not produce such good prints as expected from its faultless appearance.

I may here remark that the use of an acid sample of sulphate of iron invariably tends to produce a coarse deposit, and will never produce so great a range of tone as a non-acid sample. This kind of sulphate—the acid kind—is readily distinguished by efflorescing instead of oxydizing on exposure to air and moisture.

I formerly used to advocate the employment of a great variety of developers, but have of late considerably modified my ideas on this matter. One strength of developer for summer and another for winter is nearly all that is required in general use for landscapes, portraits, or reproductions. Of course, occasions will arise when a special developer may be an advantage, then by all means adopt it; but, in a general way, one kind is all that is necessary for the copy of an engraving on a delicately-modelled portrait. I believe the difference in the subject to be copied may be equalized for development by difference in exposure.

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* Read at a meeting of the North London Photographic Association, March 3, 1869.

Economy is an excellent thing, but a mistake if applied to the sparing use of the developer—especially in large work, which, of all kinds, requires a steady, copious, unhesitating application. Never mind a little waste, a great advantage will compensate for it; and, rest assured, there will be plenty of silver left to make the image. All that is required is a proportional and even deposit, which is certain, if the plate has received the right exposure, of making a good negative. Mark the difficulty of copying a pencil sketch on white or grey paper—to cover the whole of a large plate to the edges, keeping an equal intensity throughout—if the economical method of developing is adopted; but use it with a lavish hand, see that the whole plate is covered with one unbroken flow of developer—never mind the silver washing off—and you will succeed in obtaining an evenly and accurately-developed negative. The same rule applies to a picture full of lights and shadows; but in this case uneven development is not so observable, on account of the subject preventing an easy comparison of its different parts; whereas, in the first instance, any difference is very conspicuous. Once obtain an evenly-developed negative, and the intensity is readily managed; on the other hand, begin with an irregular deposit, and the after-intensifying is rarely satisfactory.

The time of exposure is of the utmost importance, more so than many feel inclined to admit who leave the development to remedy any little mistake in this respect. When a properly-timed negative is developed, it is very difficult to injure it by keeping the solution on the plate; but should it have been either under or over-exposed, risk of fogging is greatly enhanced. If possible, do not hurry the exposure at any time, especially in bright sunlight, where not the light, but the shadows, require most consideration.

The axiom, "Take care of the shadows, and the lights will take care of themselves," is very important to recollect, but frequently neglected. There is so much temptation to expose too rapidly in sunlight that one yields to it occasionally, and under-exposes. There is also much difficulty in accurately determining the strength of the shadows under the ever-varying tints of sunlight. To judge accurately of this matter requires considerable practice and a great deal of observation. Practice, and practice only, can be the teacher. "Let not the light lead you to judge incorrectly of the depth of the shadows," is a repetition, in other words, of the adage aforesaid, for its importance can be scarcely overrated, varying, as all shadows do, with the quantity and colour of the light.

Every photographer knows, the more white clouds the more rapid the exposure, for the reason that the shadows are reduced in intensity by reflections. The contrasts are therefore less, and the exposure for both lights and shadows more equalized. It occasionally happens that every effect of light and shadow is reversed in the negative, the sunlight actually becoming the shade—an anomaly seemingly impossible, but proved a short time since by Mr. Rejlander, who, in the open air, produced a portrait in which the sunlit side was the shadow side, or, more accurately, the darkest side. In explanation, I must say that the colour of the setting sun was orange-yellow, and the light reflected from the blue sky more actinic in character than the direct rays of the sun; hence the result. If, therefore, direct light can result in the representation as of shadow in the photograph, at some period there will be a balance between the two, where a sunlit landscape with apparently bold, strong, shadows would be represented in the photograph as entirely destitute of them—the effect being that of a gloomy day. This extreme would be rare, no doubt; but, coming, as it does, within the range of possibility, shows that extraordinary and unexpected differences may exist between the natural effect and photographic reproduction. Photographers should therefore cultivate the knowledge of colours, to enable them to judge correctly between the apparent and real intensity and force of light and shadow. The educated eye would tide over difficulties, and not know them, that the uneducated would find a rough and unsatisfactory track. Guesswork, though it may be occasionally right, is at best but a wasteful and precarious method of arriving at a result that may be attained surely and certainly, without waste of time or material, by systematic and careful observation.

There has been so much written and said about the manipulations requisite for the production of a good negative that I will not tire you by going through a number of directions that can be read in any good work on the subject. I will merely glance at a few manipulations for which no special rules have been laid down, and that I have found to answer well in practice.

For keeping plates moist some time in case of a long exposure, or having to take the plates a distance before and after exposure, my favourite remedy is glycerine, mixed with 2 parts of distilled water, 15 grains of nitrate of silver, and a drachm of acetic acid to the ounce. With this mixture coat the plate after sensitizing, drain, and it is ready for use. Success depends on the preparation of the mixture and purity of the glycerine. You will say, "Of course it will;" yet many have tried, and failed to get good results.

The purity of the glycerine is the first thing to be ascertained, and it may be determined in this manner:—Place a little to be tested in a small bottle, adding thereto a few grains of powdered nitrate of silver. If the glycerine is a suitable sample it will remain for twenty-four hours without undergoing any perceptible change if kept in the dark; whereas, if impure, the silver addition will render it, almost immediately, brown and muddy. Of course, a sample of this kind must be rejected, as its use would only plunge the photographer into difficulties. Having once satisfied ourselves that the glycerine is all right, add the water, silver, and acetic acid; place the whole in the sun for a few days, or until there is no further deposit; filter, and the preservative is ready for use, and will last in good working condition till used up. I have some in first-rate condition now that has been made and frequently used for the last two years.

For very long exposures I prefer to wash the plate with distilled water previous to the application of the preservative. I fancy, by so doing, there is less inclination to fog. I must tell you there is a gradual diminishing of sensibility, so that at the end of six hours three times longer exposure is required than during the first hour, and this is about half as long again as with the ordinary unprepared wet plate.

If re-intensification be required, pyrogallic and citric acid may be used, with the addition of twenty-five per cent. of acetic acid. This is required on account of a great tendency to stains and discolouration these plates have, if long kept. The acetic acid seems to be quite a panacea for this kind of evil. Should a plate become stained by any chance (either with or without the preserver) during re-intensification, it may be partially remedied, if very bad, and quite, if only slightly, by pouring over the thoroughly-washed plate a saturated solution of bichloride of mercury, then again thorough washing. This may be repeated several times if necessary, alternating with a dose of cyanide. Very stained and discoloured pictures can thus be rendered serviceable that would otherwise be perfectly useless. I will not longer trespass on your patience, for, as I have already said, I do not suppose I have told you anything particularly startling or new; but if I happen to have suggested or re-suggested anything that will be of assistance in a case of difficulty, the purpose of this paper will have been answered, and I shall congratulate myself that I have not taken up your time to no purpose.

With respect to lighting: no special directions can be of much practical use. Refined feeling and cultivated taste are the best mentors. In portraiture, light the subject so, as much as possible, to hide the defects and enhance the value of the good qualities. Make the face the principal point of interest, and do not cut up the picture with too many lights on any other part of it. In landscape, let the lights and shadows help the perspective; keep them well together in masses, and do not distribute them equally over the whole of the subject. A well and cleverly-lighted picture has a charm of its own, irrespective of form or manipulation.

Correspondence.

THE URANIUM INTENSIFIER.

Sir,—In Mr. Andrews' letter on the uranium intensifier he lays down two maxims: 1st, that a negative to be treated with uranium should always be rather under-exposed; 2nd, that nitrate of uranium should never be used when persulphate of uranium can be obtained. The explanation of the first maxim I take to be that, in an over-exposed negative, there may be said to be no bare glass, and that detail is generally buried under an excess of the action of light, so that uranium taking hold, as we believe it to do, equally of all the silver deposited, the result of its use in such a negative would be the exaggeration of the tendency in all over-exposed negatives to print dull and flat. The second maxim I confess I do not see the force of, except on the plea of a speciality irrespective of chemical constitution. I chose nitrate of uranium to experiment upon because the nitric acid would form a soluble salt with potash, while sulphuric acid would form one so barely soluble as to endanger a granular deposit on the film. Of course I am quite open to be converted to the superiority of sulphate of uranium, particularly as Mr. Andrews has used it with so much success; and perhaps he will kindly say why he so much prefers it to the nitrate.

The addition of gold in small quantities to the uranium solution, so as to render that salt, when applied as the modifier of the colour of a negative, incapable of a further change on being subjected to the action of light in the operation of printing, is claimed to be something more than a suggestion; it is claimed as a fact of two years' experience. I am sure if it be confirmed by those who will doubtless eagerly seek to verify it, Mr. Andrews will be entitled to the thanks of all who are interested in the photographic art, whether amateur or professional.

Washwood, March 6th, 1869. John Anthony, M.D.

Proceedings of Societies.

North London Photographic Association.

The usual monthly meeting was held in Myddelton Hall on the evening of Wednesday, March 3rd, Mr. G. Wharton Simpson in the chair.

The minutes of a previous meeting were read and confirmed.

The following gentlemen were elected members of the Society:—Mr. J. W. Smith, of Brigg, and Sr. Domingos Pinto de Faria, of Oporto.

Mr. Dunmore read a paper on Exposure, Development, and Lighting (see p. 127).

A desultory and conversational discussion followed, in which Mr. Cooper, Mr. Goslett, Mr. Hill, Mr. Dunmore, and others took part. Referring to the use of glycerine, and the fact that some samples turned brown on the addition of nitrate of silver,

Mr. Hart remarked that if the glycerine turned brown in the dark it was probably contaminated with a sulphide.

Mr. Shave asked if any danger existed when Price's glycerine was used.

The Chairman said he believed that Price's glycerine might be relied upon for absolute purity. One important point to be borne in mind, when employing glycerine, was the importance of using a bath which did not contain free nitric acid, as glycerine was readily acted upon by nitric acid.

Mr. Dunmore had used baths containing small quantities of nitric acid without noticing any evil results.

Mr. Hart, referring to the developer, thought it was important for negative work to avoid samples of iron containing free sulphuric acid. Those samples which effloresced when subjected to the action of the atmosphere were to be rejected; those which rusted to be chosen. If the latter were dissolved, then filtered to get rid of the oxide, and afterwards had acetic acid added, it would yield a good developer.

After some further conversation and a vote of thanks to Mr. Dunmore the subject dropped.

Mr. Belton exhibited a series of fine plain paper prints which he had prepared in anticipation of a paper and a discussion on the subject. They were produced on papers prepared without the aid of organic substances to keep the image on the surface, but by means of different chlorides in different proportions, floated on the ordinary silver bath, and toned and fixed in the same manner as albuminized paper. Many of the results were exceedingly rich and vigorous, and excellent in colour.

After a general conversation, in the course of which much admiration of the prints was expressed,

The Chairman thanked Mr. Belton, and expressed a hope that when his experiments were completed he would give the Society the benefit of the results.

The following was then read as the

Annual Report of the Committee.

Your Committee, in presenting their Report of the proceedings of the past year, have no striking facts to announce, nor startling discoveries to chronicle; but if there has been an absence of exciting events, there has been a continuance of the steady prosperity which has hitherto attended the Association, and they think they have reason to be satisfied with it. The meetings have presented the same agreeable features which are characteristic of these gatherings, and which it is the earnest desire of the Committee to maintain, as it renders their duties not only light, but exceedingly pleasant. The following is a statement of the subjects which have been brought before the Association:—

The first meeting was occupied by a discussion on Glass, followed by an exhibition of portraits taken with a limited amount of direct light, producing very beautiful results.

The second meeting was devoted to a paper by Mr. Bockett, On some of the changes that take place in photographic materials and chemicals after a lengthened disuse.

The third meeting took into its consideration the best means to be adopted to secure the presentation photographs for the year, which resulted in a competition for the supply by some of our best artists; the pictures by Lake Price, N. K. Cherrill, and O. G. Rejlander being selected.

At the fourth meeting Mr. N. K. Cherrill read a paper on the Relation between Intensity and Tone, which caused a prolonged and interesting discussion.

The fifth meeting was devoted to the examination and discussion of prints by Woodbury, and enamels by Henderson.

The sixth meeting was taken up with the consideration of Printing on Plain Paper, illustrated by Mr. Bedford; by Prints on the "Wrong" side of Albuminized Paper; and on Transparencies for the Lantern, exhibited by Mr. J. Taylor; and the new Mezzotint Photographs by Carl Meinerth, exhibited by Mr. G. Wharton Simpson.

At the seventh meeting, Mr. W. W. King's paper "On Neglected Art Subjects for Photographs" was read, and profusely illustrated with photographs by Bedford, Collings, and himself; and a short paper by the Secretary on Artificial Light and Development Printing, in which he introduced the subject of a new light to be produced by the combustion zinc.

And at this, the last meeting of the year, the election of officers will, as usual, take place.

The Committee desire to express their thanks to the before mentioned gentlemen, who have so kindly assisted them.

It is with much pleasure that the Committee find that the selection of photographs for the year has met with such general approval by the members, and they deem it but just that the thanks of the Association should be accorded to the gentlemen who supplied them.

The financial statement is satisfactory; and although the balance in hand is not so large as it was last year, it should be borne in mind that a portion of last year's balance was due for photographs which had not been charged to the Association in time to pass the accounts.

The Committee have to regret the decease of Mr. J. A. Barber, who was one of the promoters of the Association, and for many years served on the Committee. He was a valuable member, and his extensive chemical knowledge was always at the command of any member who applied to him for information.

Lastly, they deem it not out of place to request that members will kindly remember that the year commences with the 31st March, and that the new Committee will be greatly aided in their duties by an early payment of subscription, which enables them to decide upon the number of photographs which will be required, and to apply as large an amount as possible towards that object.

They now retire from office, and trust their efforts to promote the efficiency of the Association have not been in vain.

The Report having been received and adopted, the officers for the ensuing year were then elected, and stand as follows:—

President—C. Woodward, F.R.S., J.P.

Vice-Presidents—J. Cooper, A. Goslett, and G. Wharton Simpson, M.A.

Committee—W. W. King, W. Bedford, J. C. Belton, E. Dunmore, F. W. Hart, W. Morley, T. Ross, W. Shave.

Treasurer—D. W. Hill.

Honorary Secretary—John Barnett.

The Treasurer's account was then read, and showed a balance in hand of £25 8s. 11d.

After some votes af thanks the proceedings terminated.

PHOTOGRAPHIC SOCIETY OF LONDON.

The usual monthly meeting was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, March 9th, the Rev. J. B. Reade, M.A., in the chair.

The minutes of a previous meeting were read and confirmed.

The Chairman called attention to the projected French Exhibition, and to three volumes of Reports of the United States Patent Office, and the Report of the Society of Agriculture and Arts of Ontario, presented to the Society. He also called attention to the fact that the presentation portraits of the late Mr. Claudet were now ready for delivery.

The Secretary called attention to some photographs of the sun's disc, showing a singular group of sun spots which had recently been noticed, and recorded by the aid of the photoheliograph at Kew.

The Secretary then read a paper by Mr. Woodbury on the Photo-Relief Printing Process, Mr. Woodbury being out of England. Mr. Smith, of the Photo-Relief Printing Company, and an assistant, demonstrated the mode of working, various prints on paper and glass being produced in the meeting.

Mr. H. Cooper called attention to the increased size rendered possible by the substitution of collodion for mica as the support of the gelatine relief.

Mr. Peter le Neve Foster asked if 800 impressions were the limit which one plate would produce. There was so little wear and tear in a vertical pressure that he should have expected that a plate would yield a larger number of impressions.

Mr. Smith said that the wear was very slight, and they had produced upwards of 1,000 impressions from one plate; and as one relief would produce several plates, they could really produce 10,000 impressions from one relief.

A desultory conversation followed, in which various suggestions were made for producing the printing plate in some harder metal, especially in copper by means of electrotype.

Mr. Wharton Simpson said Mr. Woodbury had originally commenced his operations with copper plates produced by the electrotype process, but had abandoned it, not only because his present method of producing his printing plates was much easier, but because, owing to the naturally greasy or unctuous character of the surface of lead, it readily parted from or "delivered" the gelatinous impression with very little oiling, and was therefore by far the most convenient surface for printing in this especial manner. As Mr. Woodbury really did not require a harder surface, he was able to avail himself of all the advantages presented by his compound of lead and antimony without suffering any disadvantages.

After some further general conversation, in which Mr. Foster, Mr. Bocket, Mr. Howard, Mr. Davenport, Mr. Smith, Mr. Blanchard, and others took part, the subject dropped, and a vote of thanks was passed to Mr. Woodbury, Mr. Smith, and his assistant.

Mr. Hughes said he had to introduce to the notice of the members something in all respects different to that which had just engaged attention. Whilst Mr. Woodbury's aim was to produce photographs in large numbers at a cheap rate, the aim in Mr. Sarony's pictures, to which he was about to call attention, was to produce the highest result by the simplest means in individual portraits. All those present who were readers of the Photographic News—and he hoped they all were—had seen the very graphic account of these pictures, and he was bound to say that it was not in a single word too highly coloured. The first impression of everyone on examining the specimens was that they were highly artistic crayon drawings, and few were prepared to believe that they were simple photographs.

The Chairman: But is it possible that they can be simple photographs?

Mr. Hughes continued, observing that such a question might well be put; and the next idea, on learning that they were photographs, would be that they were photographs very highly worked up. The reply was, that they were photographs, and that they were photographs which the pencil of the artist had never touched at all. The photographer here was not at the mercy of the artist in any degree. Even after reading Mr. Simpson's graphic account, the question would be put on seeing them: Could such perfect results be produced by such ridiculously simple means? He would, after the members had examined the specimens, dissect them, and show them the components by which the perfect whole was produced. After showing the examples, and pointing out the details we described last week, Mr. Hughes went on to speak of the permanency of such pictures. He then pointed out that the principle was of wide application. One important point for professional photographers to remember was, that a transition was taking place in the public demand for photographs. The public taste for photographs was not decreased, but there was no longer demand for large numbers. Instead of requiring a dozen or two cards, the demand was for one or two fine pictures. The public were willing to pay the same amount of money, but they wanted excellence rather than quantity; and here was a means of simply and easily meeting that demand. He might remark that Mr. Sarony had patented the combination which he had just described and shown to them. That, however, was not a point for their attention at this meeting. He would only say, therefore, that Mr. Sarony's arrangements were of a nature to make the working of his patent the least possibly restrictive to photographers.

Mr. Henderson said that they all must feel obliged to Mr. Sarony for a sight of such pictures, and to Mr. Hughes for his interesting remarks thereon; but he thought it was an error to call them new. Twelve or fifteen years ago collodion positives with transparent backgrounds were exhibited with coloured paper or landscape designs placed as backing; and some few years ago a Frenchman called upon him with some coloured pictures, which he concluded were produced by a transparent picture placed on a roughly coloured print. He believed that the Stereoscopic Company took up and worked such a process. He did not see how a patent for this could be maintained.

Mr. Hart said Mr. Henderson laboured under a mistake. The pictures on glass to which he had referred were ordinary glass positives, whilst these were transparencies.

Mr. Blanchard referred to Mr. Woodbury having produced some of his pictures with a coloured design produced by chromo-lithography.

A MEMBER said that the coloured pictures which the Stereoscopic Company had worked were produced by a method different to this.

The CHAIRMAN said that the question of a patent was one they could not discuss here; taking the results as they saw them, they could only say they were very beautiful and highly artistic.

Mr. HUGHES agreed that the patent question was one which was out of place in that discussion. There never had been a good thing introduced to photographers yet but what some were ready to cry out that it was old, and that they had known all about it. He believed that if a perfect means of taking photographs in colour were published tomorrow, some one would say that he had known all about it before.

Mr. ENGLAND admired the results very much, and thought it was a pity that the image was on such a fragile substance as glass. Possibly a method of stripping the film might answer.

After some desultory conversation and a vote of thanks the subject dropped.

The CHAIRMAN announced that at the next meeting Mr. Brown, of Woolwich, would read a paper on Gun-cotton. The proceedings then terminated.

Scientific Gleanings.

THE PHENOMENA OF SUPERSATURATION.—Mr. Charles Tomlinson, one of our most shrewd and observant physicists, has been experimenting in connection with a subject which has long perplexed chemists—the phenomena of supersaturation in saline solutions—and has communicated to the Royal Society his conclusions, and the grounds upon which they are based. They are condensed by a contemporary as follows:—1. That a number of hydrated salts form supersaturated solutions, and remain so, even at low temperatures, simply from the absence of a nucleus to start the crystallization. 2. That a nucleus is a body that has a stronger adhesion for the salt than for the water which holds the salt in solution, a state of things brought about by the absence of chemical purity. 3. That three or four salts form supersaturated solutions, which, in cooling down, deposit a modified salt, or one of a lower degree of hydration than the normal salts. 4. That this modified salt is formed first by the deposit, in small quantity, of the anhydrous salt, which, entering into solution, forms a dense lower stratum containing less water than the rest of the solution, in which lower stratum the modified salt is formed. 5. That salts of a low degree of hydration form supersaturated solutions, which, on reduction of temperature, or by the action of a nucleus, deposit the excess of salt that held the solutions supersaturated, leaving them merely saturated.

REMOVING FUSEL OIL FROM ALCOHOL.—The essential ingredient of all ardent spirits is alcohol. In addition, they all contain a large proportion of water, and a very small proportion of essential oils, which give them their peculiar flavour. If the spirit is leached through animal charcoal, these oils are absorbed by the charcoal, and the spirit comes out white and nearly tasteless. There is, however, a foreign substance that is not absorbed by the charcoal; this is fusel oil or amylic alcohol. It is a colourless liquid, of a peculiar, nauseous, suffocating, and most persistent odour, and of an acrid taste. As the boiling point of fusel oil is 270°, while that of alcohol is only 168½°, it is easy to separate the two by distillation.

SPIRIT FROM LICHENS.—Mr. Stenberg has just made some experiments with a view of converting the cellulose of certain species of lichens, which are very common in Sweden, into glucose and alcohol. The species *Cladonia rangiferina* yielded the best results. Boiled for twelve hours with water containing 12½ per cent. of sulphuric acid this lichen yielded 68 per cent. of glucose; fermented and distilled the spirit obtained was found to possess a peculiar flavour of almonds (hydrocyanic acid?), but was not otherwise disagreeable; the glucose isolated and examined had a very disagreeable flavour. Many lichens are poisonous; and all, especially those met with in northern climes, contain a very bitter-tasting principle.—*Chemical News.*

LUTE FOR CORKS.—Professor Hirzol, of Leipzig, recommends as a lute for covering the corks of vessels containing volatile substances (as, for instance, benzine, light petroleum oil, and essential oils), a mixture made up of finely ground litharge and concentrated glycerine; this is made into a paste, and the corks or bungs are covered with it; this mixture hardens very rapidly, is insoluble in and not at all acted upon by the said liquids, and is inexpensive, inasmuch as even coarse glycerine, provided it is concentrated, answers the purpose.—*Dingl. Polyt. Journal.*

Talk in the Studio.

PRESENTATION PORTRAIT OF THE LATE M. CLAUDET.—The portrait of the late M. Claudet, presented by his son to the members of the Photographic Society, was announced as ready for delivery at the last meeting. Besides being an excellent and characteristic portrait of M. Claudet, and taken only a very short time before his death, it possessed the additional interest of having been taken with a topaz lens, which Mr. Claudet had made for the purpose of testing some theories in connection with the manufacture of lenses. This lens was made of a colourless topaz, which possesses a very low dispersive power. The aperture was five-eighths of an inch; focus, 16½ inches; the distance from the sitter, 11 feet; the visual focus being 33 inches behind the chemical focus. The depth of focus was, of course, great. The sitting required was about 2½ minutes. The original negative was unfortunately destroyed in the fire in M. Claudet's studio; but the presentation print is an unusually fine reproduction from one of the few original prints in existence.

LOCAL EXHIBITION OF PHOTOGRAPHS.—We find in the *Lynn Advertiser* a long and favourable notice of an exhibition of photographs which has been open for some weeks in the Lynn Museum, chiefly contributed, apparently, by gentlemen who have lent the collections they have made of the works of various photographers, together with the works contributed by a few London photographers. amongst whom we see the names of Lock and Whitfield, Duncan Cooke, F. B. Ladbrooke, Dollamore and Bullock, and others. We commend the idea of occasional local exhibitions obtained in this way to those concerned.

ANOTHER USE OF PHOTOGRAPHS.—Few would deny that the Parisians are an ingenious race, but their ingenuity is, perhaps, nowhere more conspicuously displayed than in devices by which they contrive to show their political opinions without unpleasant consequences to themselves. On Sunday last one of the "conferences," now so much the fashion in Paris, was held at the Theatre de l'Ambigu-Comique, on "The Phenomena of Light," a subject one would have thought about as unpolitical as could well have been chosen. Not a bit of it. The lecturer, in order to demonstrate certain theories, proceeded to enlarge some photographs of celebrated persons. Now, this being done by means of a strong magnesium light, all the theatre, except in the immediate neighbourhood of the operator, was in almost total darkness. The audience could be heard, not seen. The portrait of the Emperor was received with a storm of hisses and cries of "*A la Porte!*" "*Vive la République!*" "*Il s'en ira bientôt!*" &c. That of the Empress met with a worse reception, if possible, than her husband's. On the other hand, the portrait of Maximilian was received with cheers and cries of "*Qui l'a trahi?*" Maximilian, as a bystander remarked, probably owed his popularity to the fact of his having been shot. The operator, like a prudent man, soon brought his experiments to an end, and when the gas was turned on the "agents" were very busy looking about, but of course every one looked intensely loyal. Can any one fancy a similar scene at one of Professor Tyndall's lectures?—*Pall Mall Gazette.*

THE PIRACY CASE AGAIN.—On Saturday last, at Southwark Police Court, John Benjamin Walker, a middle-aged man, dressed as a butcher, was, on remand, charged with selling copies of "My First Sermon," "My Second Sermon," and other copyright pictures and engravings, the property of Mr. Henry Graves, printseller and publisher, No. 6, Pall Mall, well knowing the same to be unlawfully made. Mr. Chipperfield, for the accused, said there was no copyright in the paintings

"My First Sermon" and "My Second Sermon," painted by Millais, as he had never registered the sale of them as directed by Act of Parliament. As Mr. Millais had not registered, he was clearly not entitled to the benefit of the Act of Parliament, and he had no right to sell his copyright until he registered it. He also contended that the photographs from a painting cannot be considered as original, therefore he thought he had raised such doubts as to entitle him to call on his worship to grant him a case for a superior court. Mr. Partridge observed that if he had any doubt as to any legal point raised by Mr. Chipperfield, he would at once grant a case for the court above; but he had not. He was, however, in doubt as to the copyright of "My First Sermon;" therefore he should strike out that, which would take off five of the cases of pirated photographs. As for the other cases, he was perfectly satisfied with the evidence, and he considered that Mr. Graves was justified in taking these proceedings for his own protection. No doubt the defendant, who went about dressed as a butcher, carried on this unlawful business to a great extent, and he should not be doing his duty unless he put the law in force. He therefore fined the prisoner £10 in twelve cases, and in default of payment he was committed to prison for six months.——A few days afterwards Mr. Chipperfield applied at the Court for a case for the decision of the judges of the Queen's Bench. Mr. Partridge told Mr. Chipperfield that he was asked to do so on Saturday, and he refused, as he did not see any point of law for discussion. The cases which he dealt with were clear enough. Mr. Chipperfield intimated that in the course of the examination on Saturday he said that Mr. Graves was not entitled to the copyright of "My First Sermon," in consequence of which his worship dismissed five of the cases. The prosecution withdrew the "Low Life" and "Ordered on Foreign Service," as they knew they were not entitled to the copyright. He, Mr. Chipperfield, had closely looked into the act of parliament, and he contended that the remainder, being copies of photographs, did not come within the meaning of the act, as the original picture had not been registered; therefore Mr. Graves was not entitled to the benefit of the act. He had merely registered the photographs. Mr. Partridge said that with regard to "My First Sermon," he dismissed the five cases attached to that, owing to the want of evidence on the part of Mr. Millais, the painter. He certainly did not consider the letter produced from him sufficient; but as for the other cases, he had not the least doubt as to the proper conviction, and he declined to state a case. Mr. Chipperfield said that as such was his worship's decision, he asked for a certificate under the 21st and 22nd Vic., cap. 43, sec. 14, setting forth whether his evidence was frivolous or not, as it was his intention to apply to the Court of Queen's Bench for a mandamus. Mr. Partridge considered the application as frivolous, and signed the certificate accordingly.

To Correspondents.

Iodizer.—If the yellow glass in your dark room window be insufficiently deep or non-actinic in colour to obstruct all white light from entering, there are two or three modes in which you can improve it. You may get some deep orange-coloured paper and attach to each pane; or you may treat it with a non-actinic varnish. We believe that such a varnish is kept by some of the dealers; but, if not, you can make it according to one of the recipes we have given in the News.

A. E. D.—It is somewhat difficult to find a gum or paste quite suitable for mounting photographs which will resist the action of water. India-rubber solution will of course do this, and it is the most suitable substance of the kind we can recommend. A solution of gelatine to which a small portion of chrome alum has been added is quite insoluble when it is dry; but care must be taken not to add too much of the alum.

W. J. A. G.—Almost any manufacturer of photographic or philosophical apparatus would make you, or procure you, such a cell. The solution should be weak and have a full proportion of acid; and the collodion should be freely bromized, as a plate containing plenty of bromide develops more slowly than one containing chiefly iodide.

W. Rowe.—The air-bubbles which occasionally form on transferring arise from the plate being slightly warm. It is important that it should be quite cold before applying the collodion. These bubbles are more apt to appear when india-rubber is used as a preliminary coating than when gum-arabic is used, as the slight tendency to dissolve under the action of the collodion which is manifested by some samples of india-rubber will at times produce bubbles.

T. P. Avery.—Mr. Sarony's patent, so far as we understand it, simply embraces the combination we have described; namely, the use of a transparent positive backed by a crayon-like design. The example you have forwarded of collodion print transferred to drawing-paper would not be affected by his patent.

Aberdeen.—There are various modes of decreasing a tendency to over-intensity: one of the simplest, and most available in your case, consists in adding more bromide to your collodion. Dissolve a grain of cadmium in a couple of drachms of alcohol, and add half of this to an ounce of the collodion; then try a plate. You will find the density of the image much modified. If it is still too dense, add the remainder. Slightly reducing the strength of the nitrate bath will also tend to reduce intensity. Let us hear of the result.

C. B.—So far as our experience goes, an ebonite bath may be safely used for field work. We have kept a silver solution in such a bath for months without perceiving any injurious result.

W. G.—Gum plates should present an even, smooth surface. The crystallized effect you describe certainly should not be present. We cannot account for it except on the supposition that some mistake has been made in the articles used, or in the proportions. Are you certain that you have not used excess of sugar? 2. As a rule, we prefer to dry plates spontaneously, placing them in a box, resting on strips of glass or glass rods. We are glad you find the Year-Book so interesting and useful.

Castleberg.—The plan of enlarging you propose is not, that we are aware of, practised by any one, nor can we perceive that any successful result could be produced. The granulated surface of the ground glass would of course interfere. There is, however, no difficulty of obtaining an enlargement direct from the negative. The object of taking a transparency, and from that another enlargement, is to obtain an enlarged negative. 2. The articles to which you refer are in the Photographic News for October 20th, November 10th, November 24th, and December 8th, 1865. We have no doubt that our Publisher can supply them.

Enquirer.—We think we have heard of the artist to whom you refer, but we do not know his address. If we learn it we will let you know. We do not know of any effectual plan of removing the scum to which you refer except drawing a strip of clean blotting-paper over the surface.

W. H. W.—M. de Constant uses several kinds of plain paper, but especially recommends Liesegang's arrow-root paper, which can, we believe, be procured in this country. The mode of preparation which Dr. Liesegang described to us some years ago was as follows:—Take 5 ounces of water, 100 grains of chloride of sodium, 1 grain citric acid, 80 grains of arrow-root. Mix the arrow-root smoothly in the solution, and boil for a few minutes in a clean porcelain evaporating-dish. When cold, it is applied to the paper by means of a sponge. M. Constant's bath is a 40-grain solution. The gelatine solution contains from 30 to 40 grains per ounce, and is applied warm. We will mention the business matter to our Publisher.

Anxious.—The fog was doubtless due to organic matter, and this caused the excess of brown turbidity produced by the permanganate. It is probable also that the bath is weak. The argentometer affords no indication whatever of the strength of an old bath which contains an accumulation of other salts. For winter a 40-grain bath is not too strong. Vigour is more easily obtainable with a strong bath than with a weak one. If a gold toning bath is kept in the light, the gold will gradually become precipitated. The lime bath, and the acetate bath, if kept in the dark, will often remain in good working condition for months. Excess of iodizer will cause markings on the film, and will sometimes burst out of the film.

St. Dennis.—Of the two lenses of the maker you name, the rapid rectilinear will answer your purpose best.

A. D. C.—Thanks.

⁂ We have received a couple of stained 5 by 4 negatives, without any letter of advice.

Several Correspondents in our next.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

ATENT OFFIC

THE PHOTOGRAPHIC NEWS.

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DR. LIESEGANG'S PAPYROXYLINE.

Considerable interest has been excited of late, amongst photographers who prepare their own collodion, by the introduction into commerce, by Dr. Liesegang, of a new form of pyroxyline of rare uniformity and excellence of quality. This pyroxyline is manufactured from paper instead of cotton, and is for distinction named *papyroxyline*. It is not pretended, of course, that the manufacture of pyroxyline from paper is a novelty. Its use from the earliest days of the collodion process has been advocated by some as producing a more limpid and structureless collodion, yielding a more brilliant and intense negative. The especial point of novelty consists in the simplified mode of manufacture, and in the uniformity as well as excellence in the result.

We have been favoured by Dr. Liesegang, from time to time, with examples of this papyroxyline, and have been struck with the rare uniformity of its quality. Nothing has been more tantalizing to photographers desirous of making their own collodion than the uncertainty which attached to the purchase of soluble cotton. An occasional example which dissolved perfectly, giving a fine transparent film, has been obtained; and then the next purchase probably gave a collodion thick, ropy, and gelatinous; or it left the bottle half full of half dissolved residue; or it dried white and opaque. This trouble has been so general that on more than one occasion disappointed experimentalists have confided to us a theory to the effect that manufacturers of collodion kept their waste batches of cotton for sale, for the double purpose of discouraging the home manufacture of their trade article, and getting rid of their occasional failures in preparing pyroxyline. But this is, of course, a fable. There is a difficulty in purchasing good cotton at all; but it is still more difficult to purchase it of uniform quality. To the small consumer and amateur the manufacture of pyroxyline is not a pleasant undertaking; there are, besides, risks and uncertainties connected with it. It requires special facilities, special precision, and special care; and, without these, there is danger to the person and uncertainty in result. "The tyro in this line of experiment must expect risk to health or life by the occasional evolition of red nitrous fumes, and risk of serious sores on hands or face, and destroyed clothing, from the occasional ebullition and spurting of the mixed acids. If attempted without laboratory facilities, the fumes of the acids, unless a very perfect draught is secured to carry them off, will injure the health, and exercise a corrosive effect on every piece of metal work in the house. Other risks and other troubles sufficiently belong to the operation to make it undesirable for anyone not accustomed to chemical manipulations. The boon which Dr. Liesegang has conferred consists in the two facts that he has provided a singularly uniform article for those who wish to obtain pyroxyline ready for use, and he has described an exceedingly simple method, free from many of the usual risks and *disagremens*, whereby either amateurs or manufacturers may produce a similar article for themselves. Before describing his operations, however, we will briefly describe the samples we have received.

Dr. Liesegang's papyroxyline is sent out in strips eighteen inches long by seven inches wide, and has the appearance of tissue paper scarcely altered from its normal character except in being a little more tough. It dissolves perfectly in equal parts of ether and alcohol when added at the rate of 7 or 8 grains per ounce, generally without any residue whatever. sometimes with a very small trace. It gives a clear, bright, glassy film, drying quite transparent, adhering well to the glass, and showing scarcely any trace of texture. Bromo-iodized one day and used the next, it worked in our hands very quickly, giving a clean, dense, brilliant image, with a fine bloom. The film, although adhering well, was found to be tough. and was readily transferred from the glass to paper. Used for collodio-chloride of silver it answers well, but gives a film somewhat tougher than we like, and it is better, therefore, for that purpose when mixed, as Dr. Liesegang suggests, with a little soluble cotton, which is best of the powdery kind. For use in dry processes, especially in preparing collodio-bromide of silver, it has not, we believe, been much tried, but we understand that in some experiments for testing its results in collodio-bromide of silver it answered well

Dr. Liesegang published first some two or three years ago the results of some experiments in the direction he has so successfully followed out. In a recent paper read before the Marseilles Society he describes the manufacture of the papyroxyline.

To prepare papyroxyline take—

Sulphuric acid	1 litre
Nitric acid sp. gr. 1·400	1 „
Fine white silk paper	126 grammes

The paper is left in the mixed acids until a piece taken out, washed, and dried, dissolves perfectly. The washing and drying are conducted as usual, but are much more easily managed than with cotton.

Having tested the excellence of the result, and being satisfied of the simplicity of the operations, we were anxious that no doubt should exist as to certain particulars not rendered quite explicit in the paper before the Marseilles Society, and accordingly wrote to Dr. Liesegang, from whom we received full particulars, which we have since verified in practice. The "fine white silk paper" is ordinary tissue paper; a sample sent by Dr. Liesegang is scarcely so fine a paper as the white tissue paper sometimes called "silver paper," used in this country. Dr. Liesegang finds that fine white blotting-paper gives a good papyroxyline, which yields a more limpid collodion than the tissue paper; but for general qualities he prefers the latter. Flax immersed for a quarter of an hour in the same acids when hot gives a fine papyroxyline, not quite so sensitive as the tissue paper.

One especial advantage over the ordinary mode of preparing pyroxyline consists in the fact that no elevation of temperature is necessary. Hot acids are not used. If the paper be immersed immediately after mixing the acids, and at the high temperature caused by the mixing, the paper is found to dissolve. The mixture is best used at a temperature somewhere between 60° and 70° Fahrenheit; Dr. Liesegang prefers 66° Fahrenheit. The time of immersion is regulated chiefly by the temperature and strength of the acids, and may vary from a quarter of an hour to twelve hours, or even six days. The higher the temperature or weaker the acid, the shorter the immersion necessary; the lower the temperature or stronger the acid. the longer the immersion necessary. But as no great harm is done by prolonged immersion, and as the test of trying a portion, always adopted, is so very simple, the absence of a definite duration for the immersion is not felt to be a difficulty. No specific gravity is given for the sulphuric acid, and we presume that the oil of vitriol of commerce, having a specific gravity of about 1·840, is meant. At any rate, we have found it answer in our own experiments. Dr. Liesegang says that he finds it necessary at times to vary the proportions of the acid with different samples of paper. We found that when excess of sulphuric acid was used the time of immersion required prolonging. After removing the paper the acids are preserved and used over and over again, as, unlike cotton, the paper can be removed with very little waste.

Besides the advantage of preparing for the market a pyroxyline of great excellence and uniformity, which is a boon of value to photographers, Dr. Liesegang has, with great liberality, furnished full details of the mode of preparing it, affording to amateurs a method of preparing pyroxyline for themselves compared with which the simplest in the text-books is complicated and troublesome. With this method the necessity of cleansing cotton fibre by boiling with caustic potash, the importance of great precision as to strength and proportion of acids, the importance and difficulty of securing and maintaining a precise temperature, are, to a great extent, superseded. Some little care as to the strength and proportion of acids must still be exercised; but the possibility of compensating, by prolonging the time of immersion, for elevated temperature, is a most valuable discovery. The photographer needs but to mix his acids, suffer them to cool, immerse his paper neatly, cover the vessel with a plate of glass, and set it away for a few hours, trying a scrap now and then. When it dissolves (after washing and drying, of course) perfectly in equal parts of ether and alcohol, at the rate of from 6 to 8 grains per ounce, it has been long enough immersed, and merely requires washing and hanging up in strips to dry. If the material employed was the right thing, and the operations properly performed, the product will be an unusually fine example of pyroxyline.

* * *

HONEYCOMB CRACKS IN NEGATIVES.

Several cases of cracking in negative films have recently come under our notice, and in every instance the evidence has strengthened our conviction that the immediate cause is moisture or dampness in the atmosphere, and the remote cause the presence of traces of hygrometric salts left in the film.

The first recent confirmation of this view was found in a negative in our own possession a short time ago. It stood for some months in winter in the middle of a pile of about a dozen others, leaning face to the wall in a room in which there was rarely a fire, and tolerably accessible, therefore, to the full effect of a winter atmosphere. All but this negative were of our own production, some fixed with cyanide, and some with hypo, but all very thoroughly washed. Not one of these cracked. The other to which we refer was not our own, but had been lent for a special purpose. On examining it one day we found it honeycombed all over, the film, raised in ridges, forming honeycomb-like cells of about half a line in depth. We found, on enquiry, that all the materials had been of the best; it was varnished with a well-known excellent commercial varnish; but it had received a very scanty washing, from scarcity of water, when produced.

A very skilful artistic photographer recently called upon us with some negatives, to seek advice. The film of one valuable negative after another was cracking, always commencing at the corner at which the collodion was poured off the plate, where, therefore, the film was thickest, and retained most persistently the traces of hypo used in fixing. This trace of hypo absorbs moisture, the film rises in ridges, and eventually cracks.

On another page we publish a letter from an old correspondent and skilful amateur, who regards hypo fixing as the especial cause of this risk to the film. That it is so is partially true, but only in an indirect sense. Hyposulphite of soda requires much more careful washing to remove it from the film than cyanide, and unless the plate receive this thorough washing, traces remain in the film, and cause future risk. Hence the complaint, which we have heard before, that hyposulphite fixing is a cause of films cracking. As we generally recommend hypo fixing, because of the dangers to health of cyanide, we wish strongly to impress upon the minds of our readers that a very thorough washing of the negative is imperatively necessary after hypo fixing, to escape the risks arising from the slightest trace left in the film.

Our attention was called a few days ago, by Mr. Matthew Whiting, to some negatives the films of which had risen into honeycomb-like ridges a short time after varnishing. Something like half-a-dozen out of a large batch of very perfect gum negatives taken in Scotland last autumn had risen in this way. In every instance in which this honeycombing occurred the cause was distinctly traceable: the perfect washing of the negative after fixation had not been effected at once; water had been scarce, and the film was suffered to dry, with a view to a more perfect washing, after fixing, at a convenient time. This final treatment was not neglected, but it is tolerably clear that the film having been suffered to dry, it became much more difficult subsequently to remove all traces of the salt, and that, notwithstanding a good final washing, it had not been quite sufficient. It will be seen that in each of the cases we have named, the presence of traces of the fixing salt left in the film have been the probable cause of the cracking of the film, the coating of varnish, however perfect, being insufficient to prevent a hygrometric salt from absorbing moisture, and so causing destruction of the negative.

Mr. Whiting described to us a very simple remedy which in his case had been effective. We have described in former volumes the mode of restoring these honeycombed films by means of the vapour of alcohol. Mr. Whiting managed in a still simpler manner. He took a little alcohol and warmed it, and poured over the film. This softened the varnish and saturated the film, the ridges went down, and a second varnishing restored the negative, for all printing purposes, to its perfect normal condition.

* * *

ANOTHER NOVELTY IN PORTRAITURE.

Another pretty novelty in portraiture has been brought under our attention by Mr. Holyoake, of Westbourne Grove, in which the effect is produced by very simple means. The pictures before us are card portraits, presenting several modifications of the effect. We will describe one: A vignetted portrait of a lady appears in a white oval surrounded by a delicate tint of grey, with a very slight tendency to green, which gives at once value to the whites and richness to the warm sepia tint of the blacks. The grey tint appears to be printed on the albuminized paper; but the difference in colour from that of the image forbids the supposition. The next conjecture is, that it has been produced by some mode of dyeing the margin, protecting the centre by means of an oval mask; but the mode of doing this does not seem apparent, and such a plan is really not employed.

Mr. Holyoake effects the end by much simpler means. The grey tint is produced by printing on the card, used for mounting, a design in black, or whatever form may be required for the grey tint in the finished picture. In the special card we are describing, a broad black margin is printed with an oval centre left white. The print on albuminized paper, when mounted on this card, is sufficiently transparent to permit the black to be seen through as a grey tint, which gives the effect we have described. Various designs of border can of course be produced in this way, suited to different pictures. The effect of a portrait on tinted paper with white high lights can be readily produced by mounting the print on a piece of black paper upon which the lights are scratched out; or the lights, instead of being scraped out of the mount, may be put at the back of the print in Chinese white, and will appear through the paper delicately softened and very effective. We commend this simple method to the attention of those of our readers who may wish to produce pretty varieties in finish by very simple and ready means. The black for experiment may be easily stencilled on the mounts.

CARTES-DE-VISITE.

A recent number of *Good Words* has an article on this subject by Dr. Andrew Wynter, which contains some amusing gossip and some amusing blunders. We are told, for instance, that as good portraits "may be obtained in Seven Dials, as regards mere likeness, as can be procured in the more aristocratic parts of the town," the writer continuing:

"It does not always follow that persons in the highest station command the best portraits. It is notoriously otherwise, in fact, with regard to the highest lady in the land. There has scarcely been a good portrait recently taken of Her Majesty. This seems perfectly unaccountable; but we understand that the same etiquette which would not allow the chafing-dish to be removed which burned the Spanish king except by the proper official, will not permit of the artist posing his august sitter. The best attitude, the most agreeable light, the most pleasing expression which he may select, or call forth from the ordinary sitter, is denied to him by the court rules of the lady whose carte-de-visite is the most universally in demand. When Prince Albert was alive all etiquette was banished; he himself, with his artistic instincts, posed his Royal Consort, and the photographer found the most delicate part of his work done for him. At present the Queen merely takes her seat, and intimates through her Secretary that she wishes to be taken in a certain attitude, and the artist has nothing to do but to comply with the order. It must be evident that photographs taken under such circumstances cannot be very satisfactory. Even such as may turn out well never reach the public, inasmuch as Her Majesty purchases for her own use all the best negatives, prints from them being taken by her own photographer."

The true and most pressing reason of the imperfection of many of the portraits of the Queen is found in the fact that she is generally taken under unsatisfactory circumstances as to lighting. Instead of going to the photographer's studio, where the light is under control, she is generally taken in the open air, or under some improvised conditions. Some of the recent portraits of Her Majesty are unquestionably the most pleasant, and much superior to any taken in the time of the Prince Consort. The notion of the Queen taking her seat and communicating with the photographer by her Secretary may have been true in some cases, but is by no means the usual course. She enters into such conversation with the photographer as may be necessary without reserve; and in answer to a suggestion, "Your Majesty is looking very grave," has replied, "I wish to do so!" The idea that prints from the best negatives never reach the public is altogether an error; the practice which at one time obtained of having the negatives delivered to her has been for some time, we believe, entirely abandoned.

We have some reasons given for the excellence of card pictures at which photographers will smile:—

"The reason of the popularity of the carte-de-visite is obvious. The small size of the picture employs only the centre of the lens, its truest part; hence the clearness and the sharp definition it gives to the features; but what is gained in these particulars is lost in modelling and half-tones, which give all the delicacy of expression to the face which we see in cabinet photography and the vignette heads. These latter are generally cut out of large existing photographs, and are not taken for the occasion. The beauty of some of them, especially of the leading actresses, is pretty sure, we think, to bring the now size into fashion."

The best vignette heads, it is scarcely necessary to say here, are always expressly taken with a view to that mode of printing. After some curious remarks on the late M. Claudet's mode of obtaining diffusion of focus "by means of a moveable lens in his camera," and a brisk attack on what he considers the "barbarous practice" of painting photographs in oil colours, the writer proceeds to some excellent general remarks, which we reprint:—

"It is a very common thing to hear a person say, 'They never succeed with my photograph.' We admit that the portraits of our friends are capital, but our own are 'not a bit like.' And there is something more than mere egotism in this remark. How few are the positions of one's face with which one is familiar! We never see our side faces; it is very difficult to catch a glimpse in the mirror even of a three-quarter pose of the countenance; hence many photographic portraits of ourselves are wholly unknown to us. Although the mere raw outline of a face may be given as well by an indifferent lens as by one of the best, yet a likeness, in the highest sense of the word, can only be obtained by the most artistic photographers with the best appliances. Those advantages can only be commanded by the photographic firms that are largely employed by the public, and have been trained by large practice. It is vain to look for anything like an artistic performance from men who have left some trade or handicraft for the more profitable camera. It is by such hands that the many hideous likenesses to be found in most carte-de-visite albums are produced.

"In France they have a keen appreciation of the difference between a good and a bad photograph. They produce some of the very best, and some of the worst. At the last Fete of St. Cloud, near Paris, there was a photographic van placed in a conspicuous position to make a trade of taking cartes-de-visite during the progress of the festival. On the outside of the van was a printed bill containing the following announcement:—

PHOTOGRAPHIC AMBULANTE.
Fete de St. Cloud.
Carte-de-Visite.

La douz,	Air de Famille,	Ressemblance garantie,
3 francs.	5 francs.	8 francs.

Thus the skill of the operator was nicely adjusted to the wants of the sitter. When mere quantity was required, three francs a dozen only was demanded, but a family likeness must be paid for liberally; and for a guaranteed resemblance the highest charge of all was demanded.

"In these days of advertising, when so many people are clever at keeping their names well before the public, it is not to be supposed that the photograph is overlooked. When we scrutinise the scores of faces that gaze upon us from the booksellers' windows we cannot help remarking that some heads are repeated with a pertinacity that is by no means commensurate with their real character. Upon inquiry such individuals will be found to make capital out of this forced notoriety. Actresses, in particular, imagine their fame depends upon the profusion with which their cartes-de-visite appear in public. In cases where the sitter is very celebrated, and is sure to sell well, it is becoming the custom to demand a royalty for the use of the negative. We believe Tom Sayers was the first to set this fashion, just after his famous fight with Heenan. Not only did this worthy sell his 'mug,' as he termed it, to one of the sporting publishers, but he engaged to give them the exclusive copyright in it, to the exclusion of all others. But actresses and pugilists are not alone in this desire to be constantly before the public. The pedestrian may recognise the face of more than one clergyman who takes this means of keeping alive his popularity, and we more than suspect some physicians of taking the same course of increasing their practice. It is a refined method of advertising, which cannot well be brought home to the individual; moreover it has this advantage over the newspaper puff, that its cost is defrayed directly at the public expense.

"For the direct and avowed purposes of trade the carte-de-visite has not been so extensively used as may have been expected. Large numbers are printed for the purpose of showing delicate designs in glass and in gold and silversmiths' work by the Stereoscopic Company—a most legitimate exercise of its use; and it would be well if, as far as advertising purposes were concerned, these useful sun-pictures stopped here; but we were lately favoured with an ingenious application of its powers as a begging medium. A card with the portraits of six children reached our hands, with a printed flyleaf to the interesting family picture to the following effect :—

"'Children to Save.

"'Advertisement sent to a few taken from the London Court Directory.

"'The father of these British-born Protestant children is an elderly gentleman, ruined by competition in business, and past beginning life again; and the mother is in a very precarious state of health. To seek for adopters is against parental instinct; and, besides, it may ultimately come to that, as by the time their schooling is over, in ten or fifteen years, they would most likely be orphans, and their willing adopters would be welcome to it [*sic*]. At present the father, in his alarm for the fate of these creatures, seeks for some that would pay, not to the father, but to good boarding-schools, for their clothing, keeping, and tuition; and after school time see that they should not want. Willing benefactors are therefore requested to state what they would feel inclined to do for each child they may point out, by one of the numbers given at the foot, to Alphabet, till called for, at the Post Office, No. 1, Liverpool Street, Moorfields, E.C., enclosing card or addressed envelope, to insure correct address if a reply should be wished for.'

The children are all duly numbered at the foot of the carte-de-visite, and the whole affair affords a most ingenious application of the art to the purposes of this new sort of pattern post, setting forth specimens of juvenile raw material. Whether this audacious male cuckoo succeeded in dropping his six little responsibilities into any domestic or scholastic nest we do not know, but the attempt shows that the begging fraternity know the value of photography.

"The whole tribe of rogues who feed upon the credulity of mankind have also found out its powers of filling their pockets. The following advertisement touches a very tender chord, and we have no doubt is greatly successful :—

"'Your future husband or wife's true carte-de-visite.—Mr. H——, the celebrated astrologer, will send the true carte-de-visite of your intended, with name, age, and date of marriage, for sixteen stamps. Three questions answered for two and sixpence. State age and sex. Send stamped directed envelope. Address, Mr. H——, —— Villa, —— Road, Notting Hill, London. Answer in two days.'

This advertisement has appeared in many of the penny papers, and no doubt has eased a considerable number of servant maids and clerks of their stamps. It must certainly create a sensation in any man's or woman's mind to break the seal of the astrologer's letter, and draw forth the picture of the mate that is to be. It is, in fact, the magic mirror brought home to every door at the smallest possible cost. We must confess, however, that the specimens of promised wives and husbands we have seen have not been such as to tempt others to know their matrimonial fate by return of post.

"But photography lends its aid as easily to the rogue-taker as to the rogue. The public may not be aware that there is a photographic album at Scotland Yard, in which may be seen the carte of every ticket-of-leave man in the country. The charitable regulation which allows a convict his liberty before his sentence has expired is burdened with the condition that he must report himself personally once a month to the police authorities wherever he may happen to reside. Before leaving the prison his photograph is taken by the prison authorities, for the purposes of identification. It is, of course, for him to resist; if he does, he is not allowed his liberty. One carte-de-visite is kept in the police album at Scotland Yard, another at the station-house of the division of the metropolis in which he may select to reside, and a third is forwarded to any country district he may wish to remove to. When the carte-de-visite and the prisoner arrive at Scotland Yard a sergeant of each division of the force is called in to inspect both portrait and sitter, in order the better to identify him by the aid of the little carte in case he should fail to put in an appearance. It is scarcely possible to conceive a carte taken under less agreeable circumstances. The ticket-of-leave man's album is, indeed, a strange psychological study. The individual who opens it is prepared to find a villainous portrait-gallery of low foreheads; but his anticipations are by no means verified. Very many heads are those of the ordinary population, no better and no worse. Now and then the odd-shaped head, the curious formation of the eye, the full animal jaw, prove that we are gazing upon men predestined by nature to commit acts of criminal violence, or to perpetrate petty thefts. Sometimes a strikingly handsome countenance appears, full of intelligence · be sure that man is a forger, or a delinquent in some of the higher branches of fraud. We asked the superintendent who kindly showed us the book, if any of the police would be justified in taking any man into custody on the strength of the carte-de-visite alone. The reply was guarded: 'Not on the carte alone, but certainly after previous identification of the individual.' Appended to each carte-de-visite there is a most graphically-written description of each prisoner, especially of any particular marks he may happen to have about his person. These are powerful aids in identifying any runaway, for there is scarcely a living person that does not possess some mark about the body, not easily obliterated, that would lead to his identification. This is especially the case with the criminal population, and with the class from which convicts generally come. With a strange perversity they are in the habit of pricking in with gunpowder all sorts of marks—suns, stars, anchors, &c.—on the fleshy parts; brands, in fact, which can never afterwards be removed. In this respect they seem altogether to lack the cunning of the lower animals, many of which, as the sportsman well knows, have the tact to hide in "cover" so assimilated to that of their own body that they are overlooked. The scars, again, which men living by violence are sure to carry about them in many cases make the police officer as certain of his man as the grazier is of sheep.

"There are cases, however, in which identification of an absconding rogue by such marks, or even a comparison of his face with a photograph portrait, is out of the question. For instance, when Redpath some years since absconded, there were no means at hand by which the detectives could identify him. It was supposed that his negative would be found in some of the photographic houses, and, upon inquiry, Mr. Mayall had one. A large number of photographs were printed, and distributed among the police force; and, before long, he was detected just as he was about to sail from some port in the north of Europe. In this case he was, we are informed, much disguised.

"Only a short time since Mr. Pollaky, the private detective, made a bold stroke by the aid of a carte-de-visite. He was in search of a fraudulent debtor, a Mr. Gray, and one evening, whilst in the Stadt Theatre, in Vienna, he recognized a gentleman, elegantly dressed, who most completely answered the appearance of a photographic portrait in his possession. Without loss of time he arrested him: he turned out to be the veritable man he was in search of, and he afterwards ascertained that he had taken his passage, and was about to leave Vienna by the night mail for his port of departure.

"A far more interesting group of carte-de-visite portraits are those left by friends at the police office of persons that are missing. Young ladies' portraits in such quarters especially look out of place; but there are many such. One cannot contemplate them without a feeling of pity or commiseration. Some of them have placed shame between themselves and home; some the dark water. We fancy the carte-de-visite is of little avail in such cases.

"Viewed commercially, no art matter of modern introduction has made such extraordinary progress as photography; and this may be especially said of that branch of it which relates to carte-de-visite portraits. At the present time the sale of these amounts to between sixteen and eighteen millions a year. As we have said before, the demand at present is nothing like what it was. In the years 1860—62 no less than between three and four million cartes were sold of her Majesty. Sometimes the cartes of illustrious persons, owing to peculiar circumstances, sell at greatly enhanced prices. Thus, when the Prince Consort died, his carte was in great demand at ten shillings each. The execution of the Emperor Maximilian and the assassination of President Lincoln produced a sudden demand for their portraits with which the supply could scarcely keep pace. But independently of the trade in cartes-de-visite, a score of other tradesmen have been either greatly stimulated or brought into life by the new art. The demand upon the precious metals, gold and silver, has been very great; enormous quantities of glass are required for the negatives; the same may be said of cards; the making of albums employs thousands of persons. Cabinet-makers have additional employment in making the carved "properties," chairs and tables, garden balustrades, cabinets, that are so plentifully used. The chemists are required to furnish large supplies; the lens-makers have been rendered equally busy; and we may add, employment has been afforded to a large amount of labour, very much of which we are glad to see has fallen to young ladies. In short, the introduction of photography generally has marked a new era in the arts and the higher branches of manufacture, and, as far as we can see, is destined to a further development year by year."

Foreign Miscellanea.

The *Moniteur de la Photographie* gives in detail the several points raised in the recent action in which M. Yvon sought to recover the negative of a picture taken under his orders by MM. Bisson frères. The *Moniteur* sums up the decision thus:—"A painter who commissions a photographer to execute a photograph for the purpose of embodying the same in a picture remains the sole proprietor of the negative taken." If the decision goes no farther than this, photographers have little cause to complain.

There are at present five photographic journals circulating in Germany, two of which are in Austria, and the other three in North Germany. The *Mittheilungen* and *Correspondenz* are the official organs of the Berlin and Vienna Societies, while the other three—the *Archiv*, *Notizen*, and *Zeitung*—are private journals. Some time since the number amounted to eight, but three have lately ceased to exist. In France there are now but two journals exclusively devoted to photography; viz., the *Bulletin*, the official organ, and the *Moniteur*; another journal (*La Lumiere*) brought its existence to a close more than two years ago. Belgium has one, and Italy, also, one paper devoted to photographic literature.

At the last meeting of the Berlin Society attention was called to a circular which had been forwarded to the members by a M. Ost, of Vienna, offering, for the sum of ten florins, certain receipts for the preparation of instantaneous collodion, collodion paper, transfer paper, &c. A discussion ensued, in which any purchase of the receipts was deprecated until enquiry had been made as to the *bonâ fide* character of the transaction.

More honours have recently been conferred upon foreign photographers. M. Robert Severin, the royal photographer, residing at the Hague, was last month nominated by the King of Holland Knight of the Order of the Oaken-crown. M. Severin has of late executed some very fine portraits for the king, and is at present engaged in the perfection of photographic enamels, his labours in this direction being attended with considerable success.

Dr. E. Weiss, at a recent meeting of the Vienna Society, read a short communication on astronomical photography. He touched more especially upon the difficulty experienced from the movement of the heavenly bodies (or, rather, the earth) during the period of their reproduction, and stated that the pictures taken during the recent total eclipse were not so sharp and perfect as could have been wished. In the latter instance the action of excessive heat upon the chemicals was in some degree the cause of imperfect results.

Besides the photographic exhibition to be held in Paris, two other exhibitions will take place this year, one in America, at Boston, and one in Germany, at Groningen. The gathering at the latter place will open in July next.

M. August Linde, of Gotha, explains in the *Archiv* a method of obtaining, by means of photography, pictures adapted for use in the "Wheel of Life" or Stroboscope; four or five pictures showing figures in different positions, or in various stages of an operation, are sufficient for the production of each subject.

The *Archiv* recommends for burns by means of fluoric acid, used in the preparation of vignette glasses, the binding up of the wound in bandages steeped in acetate of ammonium; or, if bandages are not at hand, the treatment of the wound with caustic ammonia; the latter mode of proceeding is a very painful one, but by its means the wounds are soon healed.

M. Dubost, of Dusseldorff, writing in reference to the preparation of dry plates by the coffee process, strongly recommends the addition of a small quantity of acetic acid to the water baths in which the plates are washed to prevent the formation of spots or stains. A few drops of the acid in the first two baths is sufficient. To ensure the surface of the plates drying equally, they are placed in a blackened box together with a saucer of sulphuric acid, which absorbs all moisture.

Dr. Julius Stinde reviews, in the *Correspondenz*, the new manual of MM. Reichhardt and Sturenburg on Micro-Photography.

The Editor of the *Correspondenz* reports very favourably upon some specimens of photo-mechanical printing, produced by Colonel Avet's new process. The specimens are reproductions from line drawings and engravings prepared at Milan, and seem to have been produced from copper-plates, no after-touching by the graver being apparent in any of the prints. The process has been patented in Bavaria.

Dr. Hornig communicated to the Vienna Photographic Society the fact that the duty upon many photographic chemicals and requisites is about to be lessened, and that therefore the Austrians would now be able to compete more fairly with foreign photographers.

In the report submitted by the Secretary of the Vienna Society M. Schrank gave an abstract of all improvements and important modifications which have been brought forward in the photographic world during the past year, thus furnishing a short and concise history of the art for that period.

M. Obernetter has communicated a method of multiplying negatives, preparing transparent positives, glass stereoscopic pictures, opal and enamel photographs. The material employed is a modification of the collodion paper brought forward by M. Obernetter; or, rather, a collodio-chloride, which is spread over a glass plate previously coated with albumen. The collodio-chloride is applied in a room sheltered from the light, and when the plate is perfectly dry (artificial warming being employed if necessary) it is placed under a negative to print. Very vigorous printing is requisite, the period of exposure being somewhat greater than that necessary for albuminized paper. The print is washed and toned by pouring the gold solution on and off the plate, and then fixed in a 5 per cent. solution of hyposulphite of soda. The gold toning solution is prepared by mixing together—

Sulphocyanide of ammonium...	40 grammes
Hyposulphite of soda	3 "
Water	1 litre

and—

Pure chloride of gold	1 gramme
Water	1 litre.

In reproducing negatives the printing must be very vigorous and the finished tone should incline more to red than to violet: by retouching the original picture, and judiciously covering up certain parts of it, the negatives subsequently produced will often turn out superior to the one first taken.

Professor Husnik, of Tabor, has succeeded in obtaining prints in two colours, and, in proof thereof, forwarded to the last meeting of the Berlin Photographic Society a landscape picture in which the foreground is of a brown tint while the distance is of a bluish hue. The pictures are produced by means of a sensitive film compounded of gelatine and bichromate mixed with iron or lead salts, which become attached to the sensitive film in greater or less quantity, according to the degree of insolubility reached by the bichromate; by subsequently adding a cyanide, a blue or light-brown tone may be obtained. By employing various salts, and having recourse to different reagents, any desired colour may be produced by this mode of operating.

At the same meeting of the Berlin Society some discussion arose as to the most suitable proportions of alcohol and ether to be employed in the preparation of collodion. M. Kleffel suggested 3 parts alcohol to 1 of ether, while Dr. Vogel recommended equal proportions of the two solvents for summer collodion, and 4 parts alcohol to 6 of ether for a compound to be used in cold weather. In very hot climates, Dr. Vogel said that a collodion containing 7 parts of alcohol to 1 of ether answered very successfully, although some difficulty was experienced in dissolving the gun-cotton when a little ether was used.

The example set by Dr. Hornig, at Vienna, in delivering a course of lectures upon photography, is about to be followed by M. Kruger at Berlin, who proposes to give a series of eight discourses upon the art-science.

M. Schulz, of Barnien, recommends the rubbing of a varnished negative with turpentine previously to its being retouched with the pencil, as the operation of applying the blacklead is by that means greatly facilitated.

AMERICAN PHOTOGRAPAIC EXHIBITION.

The National Photographic Association of the United States project holding their annual meeting in June next, at Boston, and, in conjunction with it, desire to secure a very complete photographic exhibition. We condense the published programme put forth by the executive committee.

They offer space for their display to photographers of the States and foreign countries, to manufacturers of all articles pertaining to the art, to inventors for working models of all apparatus useful to the trade, and for all proper things of interest and value in the manipulations and mechanics of the art of photography.

Foreign artists and manufacturers who desire to exhibit should forward their articles at least six weeks before the time of exhibition, in order that ample time may be given the committee to pass them through the Custom House.

All goods sent from abroad will be returned at the close of the exhibition, or effort made to sell them if preferred by the exhibitors, and the committee be so instructed.

In all cases, foreign exhibitors are to send duplicate invoices to the local secretary, and address all parcels to him.

Those desiring to correspond on the matter of the exhibition should address the general secretary, Edward L. Wilson, Philadelphia.

No charge made for space or repacking.

Rules of the Exhibition.

The Exhibition will open June 1st, 1869. All applications for space must be sent to the local secretary before April 20th, 1869.

Articles for exhibition must be sent freight paid, addressed, "National Photographic Exhibition, care G. H. Loomis, Boston, Massachusetts," between 1st and 15th of May. None received after that date.

A list of articles should accompany each package, and a duplicate list be sent per mail to the local secretary.

All pictures, except those from foreign countries, should be framed; with foreign exhibitors it is optional. Exhibitors should put their names on their pictures.

Exhibitors wishing to dispose of their productions will send full particulars, together with their list, to the secretary.

All articles sent will be submitted to a jury for admission.

No articles shall be withdrawn until the close of the exhibition.

Articles sent will be unboxed, placed, and re-boxed without expense to exhibition.

All applications for space must specify the class of articles and the amount and kind of space required, and be addressed to G. H. Loomis, Local Secretary, No. 7, Tremont Row, Boston, Mass.

Those of our readers who are sufficiently patriotic to desire to see their country worthily represented in such an exhibition have here a good opportunity of showing our American brethren the character and quality of English photography.

ALBUMINIZING PLATES.—INDIA RUBBER.—MR. SARONY'S PROCESS.

BY SAMUEL FRY.

Certain matters, as indicated above, have been brought before us lately, and seem worthy of more than a casual notice. With regard to the first, the method, more than once adverted to in these columns of late, of giving a preliminary coating of weak albumen to plates intended for collodion work, either wet or dry, I look upon it as being of very great importance.

Every one knows the risk of having dirty plates, let the establishment be ever so well conducted, and the extreme annoyance of it: all your care and pain thrown away. In my own case I have occasion, from the special nature of my engagements, to use a number of very large plates, mostly 24 by 19, almost daily. The cleaning and polishing of these and the smaller sizes used for ordinary portraiture was necessarily a constant department. Although not more troubled than I think is common with dirty plates, or glasses that refused to take the proper polish, sometimes a sort of run of ill luck was experienced, and great trouble occasioned. Some weeks since, after a time of great vexation, owing, as I believe, to glass that really was not amenable to either cyanide and whiting, nitric acid, or soaking in bichromate of potash and sulphuric acid, I tried coating a few with weak ammoniacal albumen. It was like a charm: every plate as clear as possible, a total freedom from dirt of any kind, and great part of the labour of cleaning and polishing not required.

It is in doing large pictures that this is felt as such a great boon; there is positively not the slightest anxiety as to whether the plate is clean or dirty. When dry, the picture is more firmly adherent to the glass than usual. I am not aware of any ill effects that can possibly accrue from the use of albumen in this way, and if any reader should be in possession of information casting a doubt on its value, as affecting the permanence of the negative, it would be well to make it known. Albumen has a deleterious effect on the negative bath, and it must, therefore, not be allowed to go on the back of the plate. Should any, in spite of all endeavour, get round, let it dry, and then wipe off with a sponge. I proceed as follows:—Take the whites of two eggs and put in a pint of distilled water, add a quarter of an ounce of liquor am. fortis, and then shake up in a wine bottle for a few minutes. It will pass through a filter-paper clear and bright; the ammonia will cause it to keep well. Those who attempt to coat a plate with albumen for the first time will be rather surprised and disappointed if they fancy it will go on like collodion. It is like trying to hold a drop of mercury on a sheet of writing paper. Pour from a measure to coat a half-plate a small round pool of about 2 drachms, holding it steadily; or, better still, placing it on the top of a jar; have a piece of card ready which is not so wide as the plate by half an inch, and with this smooth it over the plate, avoiding air-bubbles, and not letting it go within a quarter of an inch of each side; pour off at one corner, and set in a rack, in a cold room, free from dust. If the room is warm (say over 55°) I find ridges form. A careful lad, with once showing, can do four dozen in an hour. When the plates have set, the drop at bottom is wiped off. I see no chance of injury to the bath. Those who once try this will not leave it off. It is a wrinkle, and I offer my thanks to the originator.

In total distinction to the above stands india-rubber, whether employed for the same purpose as the albumen, or poured on the finished plate for the purpose of preserving it, or, rather, of destroying it. In spite of all warnings, I perceive it is still recommended for both purposes. Only a few weeks since, Dr. Vogel, the talented Berlin correspondent of this journal, recorded the loss of a number of negatives of great value through it; Mr. England, also, not long since, had a serious loss through it; and, besides that, in the columns of this paper it has been condemned; and still I see some recommend a preliminary coating for dry plates. India-rubber is a very destructible gum; under changes of temperature or hygrometric variation it loses its elasticity, becomes first brittle, and ultimately is reduced to a brown powder having neither coherence nor any of the properties of the original substance. This is not theory, it is simply a record of actual occurrences. India-rubber should be avoided.

I come to the latest novelty, Mr. Sarony's new pictures; they are perfectly lovely, and, happily, require a great deal more skill, taste, and discrimination than might be supposed from the description.

The writer of this ventures to express his great regret that the introducer should have thought it to his advantage to patent it. It is so difficult to say exactly what was known, and who knew it, before a certain time. It has been the custom of photographers to freely give, for the benefit of their collaborateurs, their discoveries and improvements, and, in most cases, patents have simply prevented the thing from being worked; and this result I fear in the present case. I have tried a few experiments, and find that one's notion of what a transparency should be, has to be modified considerably to meet the case. It is a very different thing to look down upon one when laid on paper, to what it is to look through one when held up; the transparency suited for this purpose must be the most shadowy thing imaginable, and yet quite free from heavy shadows. Literally a sketch, or when placed in position, it is heavy, monotonous, worthless.

I have found collodion much diluted to be better than one containing a strong charge; the exposure is long for development with pyro and citric acid. I use myself the same instrument as for making enlarged negatives, in which the operator is in the dark room forming the camera, and the image, being visible, can be shaded at pleasure. But for the patent rights this would give a new field to photographers, for the results are charming.

Before Mr. Sarony's details appeared in the NEWS of the 12th, I had come to the conclusion that either bichloride of mercury or weak liver of sulphur were required to give the tone, and I rather prefer the colour thus given than by bichloride followed by hypo. I had also tried iron and citric acid before finding pyro was used by Mr. Sarony. I have not yet fully made up my mind as to their respective value. A novel effect in portraiture is given by this vignetting, but, of course, enlarged transparencies, backed up with paper, were done years ago; I have one now done in 1860. I do very much trust that the restriction on this beautiful process may be removed, and that Mr. Sarony will add one more name to the long list of those who have so freely given to their fellow-workers their inventions. It is from this practice that our art is what it is in 1869.

FRENCH PROGRESS IN CARBON PRINTING.

M. JEANRENAUD'S COMMUNICATION.

BY WM. BLAIR.

IN the early part of last year I took occasion to communicate a paper to a contemporary journal in reference to a process brought out in France by M. A. Marion, and patented by him in this country, and, I presume, also in France. That process was the same in principle and almost identical in detail with the single transfer process to albuminized paper, which I had long before published in this country. I went over the whole details, and showed that the only difference between the two processes consisted in some minor points of manipulation, and that as regarded the Frenchman's method, wherein a steaming apparatus was introduced for coagulating the albumen, and rollers for making the two surfaces adhere, his process was the more complex and troublesome of the two. M. Marion, doubtless for very good reasons, has since declared that he has given up his patents. But I was glad to see that the process was considered worth patenting, although, of course, the patent could not have been maintained if it had been tested.

I refer to this matter just now because I observe that another Frenchman, M. Jeanrenaud, has favoured the French Photographic Society (see PHOTOGRAPHIC NEWS of March 12th) with a communication, couched in somewhat high-sounding diction, detailing the particulars of a grand improvement which he has effected on M. Marion's process, and which turns out to be nothing more nor less than the coagulation of the albumen by spirits previous to transferring the impressed gelatine for the purpose of washing up, and also for retaining the picture as its final support. This I do think it a decided improvement in the management of that process; but it so happens that it is one which I had also the satisfaction of introducing and publishing long ago. It will be found distinctly mentioned in my article on Carbon Printing by Single Transfer in Mr. G. Wharton Simpson's YEAR-BOOK OF PHOTOGRAPHY, published in the beginning of the present year. It was first published by me in connection with this very process in the *Photographic Notes* of June 1867. I had used coagulated albumen even some time before that for attaching the black tissue to albuminized paper, but in a process slightly different from that referred to. The use of it in the one process, however, led me to use it in the other, and I found it a decided advantage and convenience.

These things show that in France they are but imperfectly acquainted with what is doing in this country, and published in the journals here; and perhaps it is not surprising that such should be the case, for in like manner much may be done in France that we are equally unaware of, for at least some time afterwards. I take M. Jeanrenaud's communication as, at any rate, a certificate by him to the value which he attaches to the improvement which he thinks he has introduced, and which, indeed, he may have hit upon in ignorance of its being known and practised before.

To obviate the transposed position of the objects in the print taken by this process from an ordinary negative, he also notices the necessity of reversing the negative or cliche from which is printed, either by lighting it through the glass plate in the camera, or transferring it to a transparent medium afterwards. This also has been known and practised in this country now for a considerable number of years.

M. Jeanrenaud is so carried away by his discovery of the use of coagulated albumen that he talks of the use of india-rubber varnish for transferring as now the old method, which has been, or is to be, superseded; and he characterizes that method as slow, dangerous, unhealthy, and costly—a very bad character, certainly, he thus gives it. I do not know what the Autotype Company will say to that. I suppose they will not admit the charge, but deal with it as an exaggeration. However, I fear there is some truth in the Frenchman's statement, and which cannot be altogether gainsaid. So far as my own experience goes, however, I must say that if we are prepared to put up with the inconveniences referred to, there is no medium that I have wrought with that surpasses the india-rubber in holding to the gelatine till the half shades are completely secured in the washing of the print, if the junction has been properly effected. This I ascribe to two causes: first, the half-greasy nature of the rubber varnish that repels, to some extent, the close approach of the warm water at least prevents it from getting behind the impressed film, and so allows the finer half shades to linger and keep their hold for a time, till the other gradations of the print are well brought up; and second, its waterproof character, by which it prevents the escape of any of the bichromate through the back of the paper, and necessitates the escape of the whole soluble matter, including the unaffected bichromate itself in front.

It was from observing this peculiarity of rubber varnish that I was led to introduce what I consider a further improvement in the albumen process as practised by myself, and that was to expose the back of the albuminized paper to light for a short time after it had been pressed for an hour or two in contact with the impressed gelatine tissue, and had absorbed the bichromate which the moisture brought out of the gelatine. This fixes a considerable quantity of the bichromate into the back of the albuminized paper without darkening the front of it, to which the picture is attached, and renders it less permeable to the bichromate in the tissue during the process of washing. If carried too far it will, of course, lower the lights, and this should be guarded against. This also fixes the attachment of the print more firmly, and has other advantages. In the course of another year I suppose we may look for this latter improvement being discovered in France, and announced with all the formality which its importance demands, for they know how to do these things in France.

Bridgend, Perth, March 11th, 1869.

THE WOODBURYTYPE, OR PHOTO-RELIEF PROCESS.

BY WALTER B. WOODBURY.*

It is now four years since I had the honour of introducing my process to the notice of this Society. I think now that it was at that time hardly in a sufficiently developed state to warrant its being brought before the world. Being unlike most so-called new processes, entirely novel in nearly all its parts, and therefore necessitating special machinery and manipulations, an extended time has been necessary to bring it to anything like perfection. Many at first apparently insurmountable difficulties have had to be overcome, which, I am happy to say, continued experiments have enabled me to do.

I will say nothing of its unfortunate career in a business point of view, as that would be out of place here.

In all its main features the process to be worked before you this evening is identical with what it was four years ago, it being only in small matters of detail, which practice alone could determine, that any change has been made.

I should have been happy, had it been practicable, to illustrate the whole of the process at this meeting. This would have necessitated my bringing the hydraulic press with which the metal moulds are made from the gelatine relief. As this press weighs about a ton, you will see the impracticability of such an arrangement; all, therefore, that can be practically shown to you this evening will be the actual printing on paper and glass.

The gelatine relief, which is, as perhaps you are aware, the starting point of the process, is obtained by exposing a thin dry sheet of bichromatized gelatine under a negative (dense by preference) to a fixed point of light, such as the sun, electric, or other artificial light. The parts left soluble are then washed away by the continued action of warm water, the insoluble part which remains forming the relief, which, on drying, serves the purpose of giving its reverse to the metal plate or intaglio printing-surface. With ordinary care twenty metal plates may be obtained from the one gelatine relief, each plate itself capable of furnishing from 600 to 800 perfect impressions; so that with the small amount of risk incurred to the negative by once exposing to the light we can produce as many as 12,000 impressions.

In this metal intaglio, as you will perceive, the most intense parts of the photograph are represented by the deepest hollows, and the half-tones by hollows proportionately less profound. Now, a semi-transparent mixture of colour and gelatine, or other substance (its density being such that the quantity lying in the deepest portions represents black), will give all the gradations from that to white, which is represented by the most prominent parts of the mould, and which, in the process of taking the impressions, comes in absolute contact with the paper, consequently forcing all the colour from those parts. By these means a result is obtained which no other process of printing has ever given, except photography, which cannot strictly be called a printing process. In the principle here involved, of different thicknesses, and consequently tones, of a semi-transparent material lies the soul of the process, the rest being pure mechanical contrivances. The only analogous results we can find are the German porcelain transparencies, where different thicknesses of a uniform material give effects of light and shade. I may here mention, en passant, that these can be obtained by the same means from photographic negatives; though in this case a relief much more pronounced is necessary. The amount of colouring matter used in the ink will depend much on the depth of the intaglio mould, as the same ink with a slightly impressed mould would give a thin, weak image, when, with a deep one, an intense image would result. Here, again, a great power is given: from a weak negative, by regulating the amount of bichromate, time of exposure, &c., a mould may be got from which strong, vigorous prints may be obtained; and from an over-developed dense negative a result full of half-tone may be produced. The amount of gelatine necessary to cause the setting of the ink, so that it may leave the mould, is so small that it really becomes, on drying, no more than the size used in water-colour drawing. At exceedingly high temperatures it is of course necessary to use a greater proportion of gelatine. By varying the quantities a brilliant or a matt surface may be obtained at pleasure.

The proof, as it comes from the mould, is now rather a delicate subject; a drop of warm water would cause it to dissolve at once; but immerse it for a few minutes in a bath of alum, and it at once becomes a solid affair, which boiling water will not remove. I do not think, however, that it would stand the action of the latter in combination with that of a scrubbing-brush. Many other agents would do the fixing as well; but alum seems to answer all purposes, being cheap and inoffensive. There are a number of applications to which this process may be applied, but time is necessary for their full development. Amongst the most valuable is that of printing in an enamel colour, and transferring the prints to porcelain or pottery; the most brilliant results could thus be obtained at a very small cost. Amongst the curious uses to which it is likely to be applied, I may mention that the firm in Paris, Messrs. Goupil and Co., who are working my process on a very large scale, and of whose reproductions of paintings you see a few examples here this evening, are in treaty with one of the foreign Governments to produce their postage stamps.

As you will learn more by what you see of the working of the process than from all I could tell you, I will leave it to speak for itself.

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* Read before the Photographic Society of London, March 9th, 1869.

Recent Patents.

M. MARION'S CARBON PATENT.

The following is the specification of M. Marion's carbon patent, which was not completed. M. Marion in a recent letter to the French Society stated that his aim in securing the patent was not to secure to himself a monopoly in the process, but to secure the recognition of the invention as his own:—

The object of this invention is to simplify the ordinary operations of the process of photographing with [illegible] and to increase the results which it presents of [illegible].

It is known that in the process of [illegible] paper the image of the original [illegible] transfers are necessary, which are effected, one from the first gelatinized paper after it has received the image from the picture by insolation upon paper prepared with [illegible], and the other from the paper prepared with [illegible] after it has been treated by [illegible] upon the gelatinized paper, which furnishes the final proof.

The present process, on the contrary, which starts with the application of the [illegible] gelatine [illegible], dispenses with the intermediary of the paper prepared with [illegible] and of the [illegible]; it gives from the first a positive [illegible] proof, which by a single transfer upon [illegible] or gelatinised paper is produced in its [illegible] sense.

One important advantage of this process is, that it gives directly proofs with [illegible] or albuminised paper, and this has never been accomplished before. This advantage is essentially owing to the method I employ of [illegible] either by steam or boiling water.

From the following description the three characteristic features of this invention will be readily understood, viz., the application of the albuminised gelatine, the production of proofs [illegible] upon albuminised paper, and the method of [illegible] the albumen by steam or boiling water.

[illegible]

It is now necessary to transfer the coloured [illegible] image upon the albuminised paper. The means I use for this purpose are an essential feature of this invention. The albuminised paper is [illegible] upon [illegible] layer of [illegible] placed upon the layer of albumen, and [illegible] together the two sheets, applied face against face, they are submitted to a [illegible] pressure between two plates of glass. [illegible] After they have been [illegible] they are submitted to the action of steam in a [illegible] closed [illegible]. The two papers are then put into [illegible] water [illegible].

Correspondence.

CHARGE FOR CORRECTING THE BATH.

Sir,—The non-arrival of my News till to-day, through the negligence of the newsman who supplies it, prevented my answering Mr. T. [illegible]'s last, and I almost feel ashamed to do so, as it trespasses on your space, and debars others from communicating what might be more acceptable to the generality of your readers. I must, therefore, preface this by saying that whatever answer I may receive from Mr. T. [illegible], this will be my last on this subject.

Mr. T. [illegible] commenced by saying he does not undervalue my method and adds "there's merit in it." Then why was it necessary for him to [illegible]. Medicine, he thought, too much knowledge was a dangerous thing and [illegible] having paid seven pounds each he was bound to [illegible] up some [illegible] to make them imagine [illegible].

As far as the merit of the remedy goes for rectifying the bath, I appeal to [illegible] to the contrary, for I know a great number of photographers who have tried it and found it thoroughly successful.

Mr. T. [illegible] says, as a general rule we are not so quick at seeing the faults of our own, &c., as those who look at them with an impartial eye. Just so: looking at his with an impartial eye, I find he ignores anything but what he promulgates [illegible].

As A. B. C. of photographers [illegible] would [illegible] have been much cheaper, and they might have [illegible] of their own [illegible]. He who professes to live by [illegible] must constantly have the [illegible] perhaps greater loss than the theoretical. We have many theoretical photographers who [illegible] could not make a passable picture. The only proof of my practical experience is that I have taken, while I have been in business here, 10,000 single card-plate photographs, and have now the negatives by me, to say nothing of the out-door works and others taken in twelve years. I might add, that though theory was the commencement, practical knowledge has made us such men as T. R. Williams, Robinson, Claudet, [illegible], &c., whose works have astonished all who have seen them, and [illegible].

In my plain, I see the fallacy of the subject. Let every man sell his ability at his own price, and get as much as he can for it, get £1 per dozen if he can, but get what he can to pay his way, and have a few pounds to spare. The public will not now generally pay the high price they did, and photographers, being more skilled, can afford to take less. But much depends upon the town you reside in and the local position of your establishment. If, for instance, in a part where the working population reside, you would hardly insist that that man should work at prices not within the reach of his immediate connection. Photography must be looked at in the light of a business as well as in the artistic sense. Many are needy because they stick out for what they call their price, and let others come in who rob them of their connection, and they, poor fellows, collapse.

When photography commenced there was the world to begin on; but now it is only the rising generation and some few who drop in and have never been satisfied, and, perhaps, never will. It is not always the best hands who get the best paid. The British public, I am sorry to say, are not educated to appreciate art; they generally go in for what is cheap. As to the 3s. people, they, perhaps, are amateurs who do not consider themselves fully proficient to charge more, and are practising at the public's expense.—Yours respectfully, J. Tulley.

March 13th, 1869.

PRELIMINARY COATINGS—WAXING GLASS—DOCTORING BATHS.

Dear Sir,—As a substratum for dry plates, Mr. Phipps mentions india-rubber and albumen. But why is gelatine overlooked? It is less injurious to the bath than albumen, and certain to prevent blistering during development, and also, I believe, the cracking or blistering of the varnished film if exposed to moderate extremes of weather which would be dangerous to plates on plain glass. For the wet process wax has been frequently said to make old, much-used glasses serviceable. We have tried it lately with considerable, though not quite perfect, success. But there are two points on which I should like to feel more satisfied. 1st. As wax is soluble in ether, and some wax, though very little, is left on the plates, is it likely, if frequently used, to injure the collodion? 2nd. As it is used to facilitate the transfer of collodion films, is it likely to make the varnished negative more liable to blister?

Though so much has been said lately about curing disordered baths, I have one now that I do not know how to cure. For some time I have kept a stock of baths in wide-mouthed bottles, using them in rotation, and find the plan answer well. Last autumn, to one of the baths which was weak I added about 12 grains per ounce of crystal nitrate of silver, to strengthen it for winter use. A plate sensitized in it, when developed with iron, was covered, especially towards the thick end, with minute black specks. I laid the bath aside for some weeks, but, when tried again, the effect was the same. Then permanganate was tried without benefit. Then sunning with oxide of silver for some days, and afterwards with chloride of barium; but still no benefit. All through the bath has had no other defect. Can you inform me the cause of the specks? If the silver happened to run in streaks towards the lower end of the plates, they were deposited so densely as to ruin the negative. I have cured some baths, for a time, with success. But as doctored baths usually seem less sensitive and more liable to get out of order, the most satisfactory cure appears to be to throw them down and mix fresh.—I am, dear sir, yours truly,

Ed. Seeley.

[The black spots are perplexing. Have you tried adding nitric acid freely? Practically, wax is found to be free from the evils you fear when used as a preliminary coating?]

THE URANIUM INTENSIFIER.

Sir,—Dr. Anthony has, in your last number, clearly and satisfactorily explained the reason why over-exposure is so fatal to success in using the uranium intensifier. My principal reason for objecting to the employment of nitrate of uranium is, strange to say, that it is apt to cause, in my hands at least, the very evil which Dr. Anthony considers it ought to obviate, viz., a granular deposit upon the negative film.

I have several times used samples of this salt obtained from the most reliable sources, and have always more or less suffered from the evil referred to, and that, too, in spite of careful filtration. I have also observed a much greater liability to brown patches and stains than has ever been the case when the persulphate has been employed. Then, again, the solution, when made with the nitrate, seems to deteriorate much more rapidly than when the persulphate formed one of its constituent elements. I find the contents of a large waste bottle—the gradual accumulations of the last eighteen months—as perfectly reliable for use as when the persulphate and the red prussiate of potassium were first mixed. On the contrary, a solution made with nitrate at a much later period had soon to be thrown away as useless. The latter is, I believe, much the more acid salt of the two. It has been suggested to me, by a well-known photographic chemist, that this fact may explain the superior efficacy of the persulphate.

Dr. Anthony is no doubt aware of the fact that the protosulphate of uranium is quite inoperative for intensifying purposes. As regards the peculiar property of gold in rendering negatives unchangeable by the action of light, I think we have a parallel instance in the case of Mr. Winter's bichloride and gold intensifier.

Every one who has frequently used the mercury salt alone is of course aware how negatives deteriorate, and become in many cases useless after a time. So far as my experience goes, the addition of gold is as efficacious as a remedy for the drawback in the use of bichloride of mercury as it is when added to the uranium intensifier. If such be the case it would be interesting to arrive, if possible, at the chemical causes of such a result. I am not without hope that Mr. Hughes or Dr. Anthony may be able to throw some light on this part of the subject, should their further experience of the modified uranium intensifier tend to confirm the views of—Your obedient servant, H. J. C. Andrews.

Lower Norwood, *13th March*, 1869.

CRACKED NEGATIVES.

Dear Sir,—Several letters have appeared in your Photographic News on this subject. May I ask your correspondents who are troubled with cracked plates if they fix with hypo soda? If so, they need seek no further for the cause, as soda fixing, in my experience, is fatal to the permanency of the film. I have looked over many dozens of plates which I took twelve and fourteen years ago: they are as perfect as they were when put in the *grooved boxes*. I always fix with *cyanide*, and use Ponting's varnish.—Yours truly, An Amateur.

October 15th, 1869.

Proceedings of Societies.

South London Photographic Society.

The usual meeting of this Society was held on the 11th inst., Mr. T. Sebastian Davis, Vice-President, in the chair.

After the reading of the minutes of the previous meeting, Mr. Sarony and Mr. Cobb were admitted members.

Mr. J. T. Taylor exhibited some photo-crayons by Mr. Sarony, and explained the method by which they were produced. The pictures were handed among the members, and created great interest. Mr. Sarony was present at the opening of the meeting, but had to leave before the subject was brought forward.

Mr. Henderson, alluding to this, said that had Mr. Sarony remained he would have asked one or two questions, which, however, he would ask Mr. Taylor instead. First, was the process patented?

Mr. **Taylor** said that it was.

Mr. **Henderson** then asked wherein lay the originality or novelty of the process by virtue of which a patent had been obtained.

Mr. **Taylor** believed that the novelty lay in the application of a sheet of drawing-paper containing certain crayon-like lines and hatchings to the back of a transparency, enlarged or otherwise, the paper not being placed in optical contact with the transparency. He further said that he understood Mr. Sarony's principal design in patenting the application was to keep the process select, and in the hands of such photographers as would not make portraits in that style at very low prices, which the simplicity of the operations and the small cost of the materials would otherwise enable them to do.

Mr. **Henderson** asked if the pictures before them were produced from ordinary printing carte negatives, or from thin negatives taken for the purpose.

Mr. **Taylor** believed that they were all produced from ordinary printing negatives. Indeed, one point which Mr. Sarony had specially dwelt upon was the fact that after supplying as many cartes from a negative as were required, an enlargement could then be made in the manner he had described, put into a frame, and sent home on approbation, the chances being that it would be kept. Even if it were not kept, the loss to the photographer would be trivial, for the same glass and fittings could be used again and again.

Mr. **Henderson** said he had recently had much practice in the printing of transparencies, and he could not see how such softness could be obtained from an ordinary printing negative.

Mr. **Taylor** said that a delicate picture could be obtained even from an intense negative, provided pyrogallic acid were used for the development; it would be more difficult to effect this if iron were used.

Mr. **Blanchard** said that Mr. Sarony's negatives were rather thin, and marvellously clear.

Some discussion having arisen concerning the tones of the pictures,

Mr. **Henderson** said he liked the tones, but thought it would be better to have the command of a warmer tone, which was difficult to get by reflected light; for anything that would tend to warm the tones would increase the density of the picture, and mar the effect by reflected light.

Mr. **Blanchard** observed that the collodion could be thinned, so as to allow for the after manipulations requisite to improve the tone.

Mr. **Henderson** said that, theoretically speaking, Mr. Blanchard was right; but, practically, the difficulty was great and almost insurmountable. With a thin collodion they got halation, and, if the proportion of iodizer were increased, they got density.

Mr. **Blanchard** considered that there could be no difficulty in getting either a warm or grey tone. A fine warm tone could be obtained from bichloride of mercury and sulphide of ammonium.

Mr. **Foxlee** spoke of the greater facility of getting a warm tone by transmitted than by reflected light.

Mr. **Blanchard** said that the paper behind not being in optical contact with the picture, the tone was due partly to transmitted and partly to reflected light.

Mr **Blanchard** then tried the effect of placing a piece of paper in optical contact by wetting it, when the beauty and vigour of the picture were greatly destroyed.

Mr. **Hart** considered the pictures so good that if the tone were altered in any way it would mar the effect, for, in his opinion, Mr. Sarony had hit the exact thing.

Mr. **Howard** said they had got all the vigour which was aimed so much at in lithographic work.

Mr. **How** considered that the beauty of the pictures was only matched by the simplicity of the mode of their production.

Mr. Werge, Mr. Fitch, and others having expressed their admiration of the crayon photographs,

The **Chairman** said that, looking at the pictures which had evoked such a great amount of interest, and knowing that no new effect was ever brought to such perfection without much labour and pains, they as a Society had to express their gratification with them, and their thanks to Mr. Sarony and Mr. Taylor in connection with their exhibition.

The **Chairman** said that a subject had been selected from the Question-Box for discussion that evening, the question being—"Whether is the Wet or Dry Collodion Process the Best for a Landscape Photographer to Exclusively Employ?" He called upon Mr. J. T. Taylor to open the discussion.

[We are compelled to defer the remainder of this report, containing Mr. Taylor's excellent remarks and the interesting discussion which followed, until our next.]

◆

Talk in the Studio.

Mr. Sarony's Photo-Crayons.—Mr. Sarony asks us to intimate to those photographers who have already applied for licenses that the whole of the ten varied tints and designs are not yet ready. Half the number will be ready in a few days, and the remainder in a few weeks. Some further examples we have seen are of still higher quality in tone and delicacy than the first. We hope to give more details shortly of the improvements. Mr. Sarony informs us that he has devised an exceedingly simple and cheap enlarging camera, the design of which he will furnish to licensees, or he will make it for them at cost price. More on this subject in our next.

The Gum-Gallic Process.—We recently had the pleasure of examining some scores of plates by this process, taken by Mr. Matthew Whiting in the Highlands last autumn. We have never seen a more perfect series of negatives, excellent alike in delicacy, force, cleanness, and free from technical defects. No process gives negatives so like those produced on wet collodion; and Mr. Whiting, an old dry-plate worker, states he never met with such certainty and immunity from defects in any process before. The plates were prepared without reference to any special mode of development; but one plate having been tried by each of the three modes—iron, acid pyro, and alkaline pyro—the iron development was found best, and all were developed by it, many of them weeks after exposure. We saw every plate produced, whether success or comparative failure, and with the exception of two or three under-exposed plates on dark subjects, and one with a slightly torn film, there was scarcely a plate which was not technically perfect, and printable up to the extreme corners.

Carbon Prints without Transfer.—We described a few months ago some very excellent examples of carbon printing, in which fine half-tone was obtained without the necessity of any transferring operations. These prints were by Mr. Blair, of Perth, a gentleman well known for his indefatigable efforts in the improvement of carbon printing, to which he has largely contributed during the last ten years. Mr. Blair has resolved to publish the process, together with much other information based upon his own experimental research in this direction, in a pamphlet to be issued by subscription at half-a-crown each; with one proviso, however: The work will only be published on condition that a sufficient number of subscribers be obtained. Mr. Blair has expended much money and time on carbon printing, and he does not wish to patent his new process; but it is necessary that he should be guaranteed from loss: he will publish, therefore, if the necessary subscriptions are forthcoming. We advise all our readers interested in such an important point to send their names to Mr. Blair without any delay, so as to enable him, without risk, to proceed with printing his work.

Fire in a Photographic Studio.—We learn from the *Surrey Comet*, with much regret, that at an early hour on Friday morning Mr. Russell Sedgfield and his family were aroused by an alarm of fire in a cottage adjoining his residence, which is used by him for the purpose of storing negatives, photographs, &c. About one o'clock in the morning P.S. Johnson saw flames and smoke issuing from the building, and instantly gave the alarm. With as much speed as possible the Kingston fire brigade with the fire engine went to the spot; and Inspector Armstrong with a number of police officers also assisted, doing good service. The fire burnt with such fierceness that, although it was raging two hours only, the building was burnt through to the roof, and the contents of three out of the four rooms were destroyed, or injured in such a manner that they are useless. The contents of the other room were much damaged by the water, although they were not reached by the flames, their escape being attributable to the fact that the door communicating with the room was shut, so acting as a barrier to the flames and preventing any draught in that direction. Mr. Sedgfield was able to save a number of negatives and other articles, which were placed in a room upstairs, before they were injured by the flames; but he has sustained an irreparable loss in the destruction of a large quantity of valuable negatives, which cannot be replaced. A great quantity of other property, including a camera worth £25, was either consumed by the flames or rendered useless. A heavy iron press, which stood in one of the upper rooms, fell through the ceiling to the room below while the fire was raging, carrying part of the floor with it. The stock was insured in the County Insurance Office, and the building in the Sun Office. The cause of the fire is not known, but it is supposed that it originated in one of the ground floor rooms, in the fire-place of which there had been a fire the day before. It is gratifying to state, both for the sake of Mr. Sedgfield and his numerous customers, that the laboratory and printing department entirely escaped unhurt, and the business will not suffer any interruption.

New Element.—Mr. H. C. Sorby, in the course of some recent spectroscopic researches, has discovered a new element, to which he proposes to give the name of Jargonium. The *Chemical News* enters into the matter in detail. Mr. Sorby says:—"Jargonia is an earth closely allied to zirconia, existing in small quantity in zircons from various localities, but constituting the chief ingredient of some of the jargons from Ceylon. It is, however, distinguished from zirconia and all other known elementary substances by the following very remarkable properties. The natural silicate is almost, if not quite colourless, and yet it gives a spectrum which shows above a dozen narrow black lines, much more distinct than even those characteristic of salts of didymium. When melted with borax it gives a glassy bead, clear and colourless both hot and cold, and no trace of absorption bands can be seen in the spectrum; but if the borax bead be saturated at a high temperature, and flamed, so that it may be filled with crystals of borate of jargonia, the spectrum shows four distinct absorption bands, unlike those due to any other known substance."

Old Negative Baths for Printing.—Dr. Vogel says that he has for years used up his old negative baths as printing baths, and has found them answer perfectly. "Lately," he says, in our Philadelphia contemporary, "I have heard many complaints that these baths will not work; and these complaints are the more inexplicable to me as I myself have been working for years with them. I found, by accident, the cause of these complaints; *i. e.*, the iodide of silver which is contained in the negative baths should be removed before using them for printing purposes. One of my pupils neglected to remove the iodide of silver, and obtained prints which refused to tone. He then removed the iodide of silver from the bath, and had no further trouble. The iodide of silver is easily removed. The bath is simply mixed with four times its volume of water; it is well shaken, left to settle, and the clear portion is poured off. It is now evaporated to the strength of 1 : 8."

To Correspondents.

To Agents and Advertisers.—Next Friday being Good Friday, the Photographic News will be published on Thursday, March 25th. Advertisers should send in their Announcements not later than Wednesday the 24th.

A Northern Photographer.—Your attempt at combination printing is exceedingly successful, the result possessing many points of merit as a picture. We shall be glad to see more of your work.

T.—The dimensions of your proposed studio are very good. The only point in which we should suggest a modification, if convenient, is the length. We should prefer 26 feet or 27 feet to 24 feet. 2. The amount of glass (12 feet) will answer very well. 3. As a rule, the wider the panes and the fewer the sash-bars the better, as, of course, each sash-bar interrupts the light; but 18 inches width in each pane will do. 4. The quality of the glass is an important question, and one on which, after much discussion, many opinions prevail. Our own conviction is in favour of common sheet glass. There is a Belgian sheet of a bluish green tint which answers well. White glasses generally become somewhat yellow under the action of sunlight, and in the course of a few years the quantity of actinic light admitted is generally sensibly diminished with all glass. It is wise, therefore, to use the cheapest, and to renew it once in a few years, when it has been found to be injuriously changed. 5. We should not have any front-light. The side and top-light in advance of the sitter will afford sufficient front-light. Your general design seems good.

S. O. L.—We have only used one ebonite bath, and our experience with it was satisfactory. If, after use, it be kept for a long time empty, we believe it may buckle in the way you describe; but if kept full it will not do so. We can only speak certainly of our own experience, and, so far as one bath was concerned, it was satisfactory, as we have stated. We have a very strong prejudice in favour of glass; but the weight and risk of breakage are serious drawbacks. We used for some time, with advantage, a wooden bath lined with pure sheet india-rubber stretched tight over the insides, and fastened in at the joints in making. It was exceedingly light, and answered perfectly. 2. We fear that orange shellac would not render glass adiactinic. Its colour is really a brown, and we fear that it would transmit actinic light in greater degree that at first sight might be supposed. A chrome yellow or orange in varnish is the best protection against actinic light.

J. H. Underwood.—Our own preference is for a ridge-roof, as giving the most simple and most manageable lighting. We have had opportunity of examining very many studios, and in more instances than one have known where glass-rooms on the principle of that enclosed have proved such failures that they have been pulled down and ridge-roofs substituted. The great defect of the design enclosed is, that it admits too much front and top front-light. The general proportions are good, and, if the design be persevered in, by all means let the side-light be continued quite to the top, so as to be almost sufficient when the bulk of the front-light is stopped out by blinds, as it will often require to be. With the bulk of the front-light removed, and the side-light carried to the top, the studio would be very similar to that of Mr. Rejlander at Haverstock Hill, which answers well.

J. O. Smith.—You do not give us sufficient information to enable us to help you. You do not state whether the subject is portrait or landscape, whether with portrait lens or landscape lens, whether with full aperture or with stop. The falling off may be due to imperfect illumination. It may be due to imperfect covering power in the lens, or to a variety of other circumstances. Write again with much fuller particulars. 2. We have not found that permanganate of potash loosened the film.

A. E. D.—We agree in your estimate of the unsuitability of india-rubber for mounting. There are various substances which have the effect of coagulating gelatine or rendering it insoluble—such as tannin, common alum, &c. Chrome alum is, however, the most effectual, as a very small trace is sufficient. The mode of operation has been the subject of much discussion. The most correct view of its action is, we believe, that we described in our work on printing in pigments, in which the insolubility is ascribed to a combination between the gelatine and sesqui-oxide of chromium. See also articles by Mr. Swan on pp. 381 and 446 of our 11th Volume.

Anxious.—The addition of permanganate of potash to a silver bath not containing organic matter would cause a precipitation of purple crystals of permanganate of silver. 2. Imperfect working of the bath, want of vigour in negatives, &c., are the best indications of the bath being too weak. 3. We cannot form any accurate estimate of the strength of bath required by a sample of paper by a mere examination. We should say that the sample sent was highly salted, and required short floating on a very strong bath. Of course we cannot say whether the want of vigour in the enclosed print is due to negative or paper. Possibly you are working with the paper too dry. Absolute desiccation in the paper is often a cause of weakness in the prints. 4. We have had good samples of paper from most of the makers you name: but we have not made such comparative experiments as would justify us in saying which was best. 5. The argentometer is useless for ascertaining the strength of an old bath, because the moment it is used silver is abstracted and replaced by other salts which have a similar effect on the density of the solution as the silver, and therefore give similar indications on the argentometer. The only sure mode of testing is by precipitating the silver from a small portion of the solution by a standard solution of a chloride. Hart's volumetric apparatus is a valuable aid.

Thos. Lampray.—Thanks.

Received:—"The Silver Sunbeam," Sixth Edition.

Several Correspondents in our next.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 551.—March 25, 1869.

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CARBONATE OF SILVER PAPER.

We have recently been trying the printing qualities of the carbonate of silver paper introduced a few months ago by Messrs. Schæffner and Mohr. The special claims of this paper consist in the fact that it requires no silver bath, being already prepared with a salt of silver, in which state it is permanent, and may be kept in the dark without change.

Several attempts have been made within the last few years to prepare a sensitive paper which would keep, and might be supplied to photographers ready for immediate use. The Leptographic paper and the Obernetter paper, both the results of our collodio-chloride process, have found some favour on the Continent; from some cause, not quite apparent, they have never been kept by any agent in this country. The Carrier sensitive albuminized paper keeps admirably without change, the only drawback being a little lack of vigour in the prints unless a very vigorous negative is used. The carbonate of silver paper is prepared, we understand, both plain and albuminized. It is the latter we have tried, with very excellent results.

In appearance it is like ordinary albuminized paper. Submitted to strong sunlight in the state in which it is supplied, it darkens very slowly indeed, becoming, after many hours' exposure, of a reddish brown tint, and never attaining any deeper colour. It appears to keep admirably: we have examined it after several weeks' keeping without perceiving any change whatever; and, for anything we can see, it may keep, under favourable circumstances, indefinitely. To render it sufficiently sensitive for use, it requires subjecting to the fumes of ammonia, after which it is as sensitive, and acquires as deep a colour in printing, as ordinary sensitive albuminized paper. As the mode of preparing the paper is not made public, the exact *rationale* of the proceedings cannot be stated. We do not imagine for one moment that the carbonate is the only silver salt present, or that the paper is prepared with albumen containing a soluble carbonate in place of a chloride, with a view to form carbonate of silver, by floating on a silver solution, in the same manner as chloride of silver is usually formed. It appears to us, speaking theoretically, that a difficulty would be found in carrying out such an operation, as the natural tendency of an alkaline carbonate to the albumen solution would be to render it so limpid that it would be difficult to obtain a good surface of albumen on the paper. It is not improbable that the paper is really ordinary albuminized paper containing a chloride, which is excited in the usual manner, the free nitrate of silver being then converted into a carbonte by floating on a solution of an alkaline carbonate. We have found, in former experiments, excited albuminized paper washed with water containing a carbonate give similar results, when exposed to light without fuming, as those we have described as presented by the carbonate of silver paper. The fuming is the important element here in securing sensitiveness, the carbonate of silver being decomposed, and a portion of oxide of silver, we presume, formed. It seems not improbable that if Carrier's paper were submitted to the fumes of ammonia, increased sensitiveness and vigour would be obtained.

Our experiments were conducted without much preparation, acting upon the hints recently given by Mr. Hutchinson in our pages. A little carbonate of ammonia and a little liquid ammonia were placed in a saucer at the bottom of a rough deal box. Upon the saucer were laid two or three pads of felt, and on the inside of the lid of the box was pinned a piece of the carbonate of silver paper; the lid was placed on the box, and left for about a quarter of an hour. The paper was then placed under a negative in a pressure-frame, and backed with a piece of the fumed felt. The printing went forward satisfactorily, a vigorous, excellent print being obtained in about the same time as ordinary sensitized albuminized paper. The operation was repeated with various modifications in fuming and in toning. We found almost any kind of toning bath readily gave rich fine tones: the sulphocyanide, the Bovey, and the carbonate of soda and gold bath all yielding good results. The more fully impregnated with the ammonia fumes the paper was, the more sensitive the paper became, printing quicker, and giving more half-tone in the prints, without, however, any want of vigour. The only imperfection we noticed was an occasional tendency to irregular toning, apparently the result of a little carelessness in the preparation of the paper.

One claim made, we understand, for this paper is, that it is less liable to produce decomposition and liberate sulphur in the fixing bath of hyposulphite of soda than paper prepared with chloride of silver. Of course alkaline conditions and a paper free from any trace of nitrate of silver are favourable to perfect fixation, and less likely to cause decomposition of the hypo, than acid conditions and the presence of nitrate of silver; but it will be necessary to know something more certain of the constitution of the paper before any certain conclusion can be attained as to the promise of greater permanency. There is nothing in carbonate of silver which promises any advantage over chloride of silver in this respect.

The chief benefit to be attained by this paper will be most appreciated by the amateur. It is the possibility of obtaining very excellent prints without the waste or trouble of pouring out silver solutions into dishes, and expending the time necessary for floating and then drying sheets of albuminized paper. Silver stains on the hands, and often elsewhere, are inevitable in ordinary printing operations. In using paper like this, printing becomes a comparatively clean operation, and the increased cost of the paper is compensated by the absence of waste, inevitable in pouring silver solutions from dishes to bottles, and *vice versa*. For the professional printer such paper presents fewer advantages, as the possession of permanent sensitive paper is not to him a point of such vital importance as the price of the paper. Many amateurs will, however, find this paper a boon well worthy of their attention.

MR. SARONY'S PHOTO-CRAYON PATENT.

The new style of portrait recently introduced by Mr. Sarony has experienced the fate of every novelty, of sufficient importance to attract attention, which has been introduced to the photographic world. Notwithstanding that the result was very beautiful, and that until it was explained no one had the least idea of how it was obtained, there are some persons ready to exclaim that the idea is old, and that the thing has been repeatedly done before. It is true that no one can produce evidence that such a thing was done before, or point out exactly where or when it was done; but it is thought sufficient to refer vaguely to a number of things somewhat similar, although not the same, in principle, and essentially different in result. It is objected, however, that the principle involved in older methods is sufficiently alike to destroy the validity of Mr. Sarony's patent.

It is no part of our duty to impeach or maintain the validity of any patent; but where it is of interest to our readers we have pleasure in collecting and examining the evidence on the subject, and giving due weight to the arguments which bear upon it. If a patent be invalid it is generally tolerably easy to prove it so, as it is only necessary to prove that the process patented has before been published, or that it has been publicly worked; and this proved the patent is at an end. But we regard it as a positive injustice to photographers, quite as much as to the patentee, to propagate doubts or suspicions as to the validity of a patent which we believe to be good. We shall proceed briefly, therefore, to enumerate and describe the various processes—most of which have been patented, by the way—which bear any analogy in principle to that of Mr. Sarony, and to point out the *differentia*. We may remark, in passing, that a *principle* cannot be patented; it is the new manufacture which is the result of the principle of which the law takes cognizance. Mr. Sarony has, by a new combination, secured a new product, and we have no doubt that the law will protect him in the use of such new result. Happily, however, whilst it is of interest, in order to satisfy the enquiries of those concerned in the matter, to examine the claims of the patent, there is little risk either of opposition or piracy, because Mr. Sarony has made such arrangements as render piracy unprofitable: he confers a positive boon upon photographers by supplying the vignetted designs to photographers at a cost out of all proportion lower than they could by any possibility produce them for themselves; and, fortunately for us, we have not to discuss a matter in relation to which antagonistic commercial interests are arrayed.

There is another important consideration that cavillers in such a case would do well to remember. If Mr. Sarony had chosen to be secret he could probably have gone on for years practising this process for his own benefit, without anybody in the photographic world being wiser or better for it. Instead of this he has adopted a course which gives it to the photographic profession at once, as a stimulus to business and a source of handsome profit. Even suppose, on the other hand, he had given it freely to the photographic public, besides having to encounter the same ungracious disputes as to the novelty of the process, he would have probably had the mortification of seeing the thing made common at once, the style vulgarised, the price reduced, and, instead of affording him or photographers generally either pleasure or profit, it would, from its simplicity of production, probably soon have ranked amongst the "cheap and nasty" products of the art. Mr. Sarony has probably, therefore, done a service to professional portraitists by the plan he has adopted.

Very curiously, modes of finishing photographs by colouring them behind, or by combining two points to form one picture, have formed a more prolific subject of patents than any other mode of treating such pictures; but whilst this combination of Mr. Sarony's is not only completely new, it appears to us, without a question, the simplest in operation and most perfect in result of any of those previously published or patented.

In the first attempt to finish photographs by a method of this kind, a paper print was rendered transparent by varnish, and attached to a plate of glass, after which it was roughly coloured in oil, the tint so applied being seen, of course, in front somewhat subdued and softened by the translucent substance of the print. This method was specified under the old patent law in 1852 by Jacques Leon Tardieu. The following year a process nearly identically the same was patented by Mr. Duppa, evidently in ignorance of the existence of a prior patent. The following year a method was described in the *Genie Industriel* by M. Minotto, which advances a step nearer to the latest improvement. Amongst other methods of colouring a photograph at the back, he described one in which a paper print was made transparent, attached to a plate of glass, and superposed upon a second print roughly coloured, by which a soft, delicate-coloured picture was easily obtained. This method, with slight modifications, has been introduced as a novelty repeatedly, has been hawked and sold as a secret, and has been again patented. Two or three years later than the date we have named, a process nearly identical was patented in the United States under the name of the Hallotype. An Australian correspondent, a few years ago, described in our pages a process which had been introduced at the Antipodes under the name of the Sennotype. A patent was refused in Melbourne because it was found to be identical with one of the aforesaid processes, and had been published in the Photographic News. About five years ago a patent was obtained by Lee and Thompson, based upon a communication from M. Mouatt, of Niagara Falls, for a similar method of finishing pictures, the use of two prints, one of which was made transparent, being the salient feature in the operation. In this case colouring was not a necessary element in the result; it was merely stated that the back picture "might be variously shaded, coloured, or tinted," the primary aim being to increase the effect of softness, relief, and depth, by mounting or superposing one delicate semi-transparent print upon another vigorous print from the same negative, sometimes bringing the two into immediate contact, and sometimes separating them by a plate of glass.

More recently still our attention was called by Mr. Gye—a gentleman whose absorbing engagements in the management of Italian Opera do not prevent his taking a deep interest in photographic progress—to a result produced by a method which he had been induced to patent provisionally for M. Strelisky, a Hungarian artist. We at once recognized in the pretty result the mode by which it had been produced. It was nearly identical with that patented by Lee and Thompson.

Besides these and some other patented methods, the same principle, or indeed the same methods, have been repeatedly introduced as secrets, and sold for a consideration. A few years ago a German artist called upon us, and showed some very prettily-coloured pictures, the mode of finishing which he wished to teach. We at once intimated our conviction of the mode employed, when he very frankly dissected one of them, and showed us that our conjecture was right. A few years ago rumour of a method of producing photographs in natural colours reached this country from the Mauritius, and M. Chambay, the alleged discoverer, subsequently showed us some examples of the work, disclaiming, however, the claims which the press had made for him. His pictures were very fine, but manifestly produced by a similar method. In all the processes to which we have referred a paper print is made semi-transparent, and is then either finished by colouring or retouching on the back, or by placing behind it a coloured or retouched print; and it will be seen that the methods, although, in some degree, analogous to that of Mr. Sarony, are so remotely so as to be altogether distinct processes.

We now come to another class of processes, which have been alleged to be the same as the recently-patented photo-crayon process. They seem so near, and yet so far from it, however, that whilst we are not surprised that the one recalls the other, we cannot understand for a moment how any one can maintain the notion of their identity. The first is known as Urie's process. In February, 1854, Mr John Urie patented a method which was to give photographs on glass "the effect of standing out in high relief from the apparent image surface." The said photographs were the old collodion positives. The mode of securing this effect of high relief consisted in coating the image only with black varnish, leaving the background untouched. A dark screen was used for the background, which being, therefore, tolerably transparent, permitted coloured paper to be seen through, the image appearing to stand in relief from such background. In the December of the same year—in accordance with the insane custom of patenting the same thing many times over—the identical method just described was provisionally patented again, but not completed by Thompson and Wagstaff; and in the following year. Mr. J. C. Clive again provisionally patented a mode of adding backgrounds to glass positives, similar in principle but varying in detail, insomuch as the supplementary background was to be photographic, presumably a photographic landscape. In the two first-mentioned specifications the idea appears to have been confined to the production of coloured or ornamented backgrounds; but in practice the thing was carried further, and coarse landscapes in glaring colours were often employed. By this method of backing collodion positives with coloured paper some of the most vulgar and tawdry effects were produced which we have ever seen in connection with photography. In Urie's method, which has been quoted as similar to Sarony's, it will be seen that there is nothing worth naming in common with the photo-crayon. One is a collodion positive produced direct from the sitter; the other is a transparency produced from a negative. One is backed with a combination of black varnish and coloured paper; the other is backed with a hatched vignetted design on drawing-paper. The ont produces a result vulgar in the extreme; the other, by more simple means, produces a picture of high character and artistic finish.

But we now approach a method more nearly resembling that recently patented; but still sufficiently distinct. In Urie's specification there is a second and, apparently, subsidiary process mentioned. It is stated that a transparent positive taken from a negative may have plaster of Paris or other plastic substance poured upon it, and when this has solidified the substance is detached, taking the film containing the image with it. In this we have the analogue of the transferred collodion print of Moitessier and Disderi, but certainly not of the new photo-crayon. Three or four years ago Mr. Pettitt provisionally specified a method of finishing transparencies by applying ornamental backings of gold or silver leaf, or coloured fabrics, and then coating them with plaster of Paris, &c.,and sealing them carefully from atmospheric influences. The next approximation to the mode of finishing under quesion is described in Ashton's specification, entered in 1866. This is avowedly for a mode of colouring the transparent pictures obtained by Mr. Woodbury's photo-relief process, by backing them with coloured images obtained either by chromo-lithography or hand-drawing. In this process the aim and result are totally different from those in the new photo-crayon process.

Besides these patented methods, various modes of using transparencies backed with plaster of Paris, paper, &c., have at times been tried by different photographers, but have never come into vogue. One of the prettiest results, and the most nearly approximate to those produced by Mr. Sarony, was known as the Ectograph, a class of picture which, singularly enough, has not been produced in this country. About eight years ago we first saw a specimen, without receiving any information as to how it was produced. It was a charmingly soft-looking coloured picture. On dissecting it we found it consisted of a toned collodion transparency, coated with a thin film of white wax, roughly retouched and tinted, and finally backed with a piece of buff paper, the combined result being very charming. A rough experiment we made at the time now lies before us. We subsequently learned that the process was patented in America in 1860.

On carefully examining every published record, and recalling every similar method we have seen or heard of, we do not find that the same combination as that patented by Mr. Sarony has ever been tried. Like John Peerybingle's attempts at a joke, they have been "very near," but have just missed identity. Those who state that they have done similar work before will be quite at liberty to do *similar* work still; but they must avoid doing *the same* thing as that which Mr. Sarony has patented. His method consists in combining the crayon vignetting on drawing-paper with the suitable collodion transparency. It is this new combination, so easily produced, giving such an exquisite result, which is patented.

PHOTOGRAPHY IN MID-ATLANTIC.

An amateur correspondent has just forwarded us, through Mr. Belton, a photograph of somewhat unusual interest. It is a 10 by 8 photograph of the deck of a mail steamer in the middle of the Atlantic, homeward bound, the decks crowded with passengers. The ship is the Royal Mail Steamer "Shannon." From the amount of canvas spread, and the mode in which the sails are filled, the wind appears to be right abaft, suggestive ot a terrible amount of rolling. There are something like forty figures visible, most of which are perfectly defined, and where they are not so it is manifestly due to the movement of the figures, and not to the motion of the ship, as every line of cordage is perfectly sharp. Our correspondent states that the picture was taken in latitude 41° 49′ N., longitude 27° 40′ W. He adds: "The vessel was rolling heavily, and steaming 11½ knots at the time. As a photograph it has no intrinsic merits that would justify me in bringing it to your notice; but, perhaps, when you take into consideration the difficulties of getting through a negative when the roll of the ship caused my bottles, &c, to be flying about in my tent in such an eccentric manner that my wonder was, when it was finally lodged in the plate-box, how I had ever accomplished the task without, at all events, an awful smash, you will regard the result as possessing some interest. The lens was a doublet; exposure about one second, with half-inch diaphram."

Our correspondent does the picture less than justice in stating that it has no intrinsic merit of its own to render it worthy of notice. Apart from every consideration of difficulty, it is an excellent picture of an interesting scene. The deck of a ship, with its varied figures, and well-filled sails bending before the breeze, is a subject full of pictorial interest, and rarely rendered; and the photograph is valuable as a picture as well as a curiosity.

COLLODION POSITIVES, AND HOW TO PRINT THEM DIRECT ON PAPER BY DEVELOPMENT.

BY W. T. BOVEY.

I have read with much interest the descriptions given in the photographic journals of Mr. Sarony's new "Photo-crayon Process," and, from the particulars gleaned, I am induced to believe that the method described *might* possibly have been known long ago; but as no evidence now exists to prove a good case, Mr. Sarony has a claim on his patent right which no amount of cavilling can upset; and it must be acknowledged that in the proposed application of his protective privilege that gentleman has exhibited great generosity and much good sense, which stand out in bold relief when compared with the selfish secretiveness of process-mongers, and the impolitic proceedings of many patentees. There is, however, presented to my mind a drawback connected with the new process which I have not seen noticed or explained; viz., whether or not the stock lithographed designs can be made applicable to every variety of pose which is to be found in a large collection of negatives; for example, one negative might be made capable of giving a graceful bust vignetted figure, whilst from another, to obtain a tasteful picture, it would be necessary to take in a portion of the dress and furniture; in each case the hatched lines would be required differently placed. I am quite aware that a suitable backing might be prepared readily by a skilled artist, but I am inclined to believe that many negatives will scarce be suitable for the production of those peculiarities in the transparent positive which impart to Mr. Sarony's productions their much-appreciated charm. It has therefore occurred to me that a supplementary process would prove valuable when the lithographed designs or the imperfections in the negatives cause a failure of satisfactory results.

There is an old proverb which argues the logical fact that a cat might be killed without submitting the animal to the suffocating mercies of the waves. By a similar rule there is no known photographic process which does not admit of the same kind of results being attained by at least half a dozen methods; and it is to this elasticity of resources must be attributed the cavilling and confusion which haunt and worry many an ill-advised patentee. In the process I am about to describe, let it be understood that I have no wish to add another stumblingblock to the many which render patent rights more a bore than a means of pecuniary profit. My chief desire is that the method I present to the public may be employed in a subordinate sense, and applied when the means provided by Mr. Sarony are found wanting; as, for instance, when a whole-sheet enlargement is required, or a picture is ordered from a defective negative, and so on. My readers will best understand for themselves the direction to which they may profitably apply the process. And now for particulars.

First procure a sample of unprepared Saxe or Rives paper, and, to remove its tendency to absorption, coat the surface with albumen, arrowroot, dextrine, gum, or any other suitable material. The size must not have too much "body," or, instead of the requisite "matt" surface, a glaze will be produced. *No salts of any kind must be mixed with the sizing solution.* Now coat the paper, prepared side, with a good sample of collodion of the powdery kind, which should be one that has been well ripened by age or otherwise. The collodion employed must be somewhat thinner than is needed for the production of a glass negative, and the film it gives should be transparent and structureless. The sample I have used in my experiments has been iodized several months, and further diluted with equal parts of absolute alcohol and sulphuric ether. To coat the paper it should be laid flat on a somewhat smaller sheet of glass. If the operator is unpractised or nervous, he may find advantage by turning up the outer edges of the paper; but to a skilful, steady hand this precaution is unnecessary. Allow the collodion to set (not dry), and float or immerse on a silver bath composed as follows:—

Silver	30 grains
Water	1 ounce.

A few words might be added concerning the silver bath employed in development printing, which should be read and digested by every one who takes an interest in the kind of work alluded to. It is a great mistake to suppose that any kind of silver bath is suitable for development printing when paper is the supporting medium. True, a solution pure and simple as the one above described may be employed with an albuminized paper; but when an iodized paper is used the conditions are as tenderly balanced as those which prove for weal or woe in the production of an image on a collodionized glass plate. Of this I have so far satisfied myself by repeated experience and observation, that I now invariably mix my silver solution in precisely the same way as I would if it were intended for ordinary collodion work. I dissolve the silver nitrate in a small quantity of water, add a trace of iodide of potassium, then add the remainder of the water, and place the bottle where it can get full sunshine, and then leave it until wanted. I then acidify with dilute nitric acid, and proceed to work.

First, I filter the silver bath, place it into the dish, then coat the paper, allow the collodion to "set," and directly proceed to sensitize by floating or immersion, keeping the dish moving, in order that the greasiness might be removed as quickly as possible. And here I would call attention to the absolute necessity of short contact with the silver bath, for it is often from a neglect of this precaution that so many fail of success in their attempts at development printing. The principle involved in the matter has recently been so well explained by Mr. Wharton Simpson that I need not occupy time and space to reiterate; suffice it here to state my belief that much of the fog observable even in negatives is caused by a too lengthened exposure of the collodionized plate to the action of the silver solution. Directly the paper is removed from the sensitizing bath, proceed to expose. If the enlarging camera is employed, and a large picture is aimed after, the sheet may be pinned on to the board in the usual way; but when the picture required is of the smaller kind, the paper, if sensitized by immersion, may be attached to a clean glass plate (the back of the paper will readily adhere) and placed in the ordinary dark slide.

Concerning exposure but little can be said, as the time necessary is a matter that requires experience. The image formed is latent. It might, however, be understood that as the paper is nearly, if not quite, as sensitive as a collodion plate, a similar rule applies to both.

Develop with—

Pyro...	2 grains
Citric acid	3 „
Water	3 ounces

The paper may either be floated on or immersed in the solution. I prefer the latter course, as it admits of the development proceeding with the paper placed face upwards, which allows the progress of the development to be watched. Do not develop too deep, as the reduction of the image by the fixing solution is very slight.

With reference to tones but little scope is given. In the pictures I have produced the tones are of a warm black, graduating from black in the deeper shadows to grey in the more delicate half tones; a collodion might, however, be prepared and made capable of producing a warm-coloured picture which would admit of gold toning. The method here indicated would be unsuitable for printing by artificial light. I have not, as yet, experimented in this direction, although I feel certain of the results to be obtained; but my rule is never to advocate a process which I have not reduced to practical test. I therefore postpone full particulars until I am in a position to speak positively on the subject.

In conclusion, with reference to the collodion process I have described, that by sensitizing before the collodion becomes dry, curling of the paper is avoided, and the collodion adheres to the paper with great tenacity, which admits of the prints receiving several hours of washing. I fix the image with—

Hypo	4 ounces
Water	1 pint.

And now, to those who have surplus time on their hands, I would say, Try, the process as I have described the several operations, and improve on the directions I have given; and when that stage of perfection is reached which causes the joyful exclamation, "Eureka!" to rush unbidden from the lips, let the News re-echo the cry of success in page of fullest details. "Freely as ye have received, freely give."

ON CLEANING GLASS PLATES FOR PHOTOGRAPHIC PURPOSES.

BY L. G. KLEFFEL.*

Although every photographer is quite aware that a perfectly cleaned plate is necessary to the production of a good picture, still many are the sins committed in disregarding this fundamental precept. Sometimes carelessness, but more frequently the unsatisfactory method adopted for cleaning the glass, is the cause of failure which from time to time attends the production of a negative; for I have known photographers who were of opinion that the more a plate is rubbed the cleaner it becomes, and in this belief they have laboured by the sweat of their brow for a full quarter of an hour in diligently polishing an 8 by 10 inch plate.

That this view is an incorrect one need scarcely be stated, for with too much rubbing the plates are not only not clean, but actually become dirtier than they were at the commencement, because the cloth with which they are polished absorbs perspiration from the hand, and thus soils the glass instead of cleaning it. How difficult it is to remove perspiration from glass may be judged by placing the warm hand upon the surface of a plate, and then essaying to remove all trace of the finger-marks left thereon.

In the present communication I propose to give the exceedingly simple and sure method adopted by me, which will enable an operator to clean in the most perfect manner thirty plates, measuring 8 by 10 inches, within the space of an hour; and I would strongly recommend the system for employment by all photographers. An absolutely clean plate is requisite in every negative process, and therefore the subject is one of wide-spread importance. What, then, is the best mode of proceeding? I answer, that neither the employment of tripoli powder, rouge, nor iodine, is desirable, but that the end is most efficiently secured by applying an acid to the plates to remove all grease and dirt, and finally washing them in clean water.

By using tripoli and other substances, impurities are almost invariably conveyed to the plates, for minute particles are, during the operation of polishing the glass, rubbed into crevices and fissures in the surface scarcely perceptible to the naked eye, and likewise attach themselves to the cut edges, especially if these latter have not been ground; thus not only is the plate but imperfectly cleaned, but the silver bath becomes impaired by the introduction of impurities. For cleaning new plates I proceed in the following manner:—

Upon a rough, unplaned board the plates are laid side by side, convex surface uppermost;† a mixture consisting of equal parts of sulphuric acid and water is prepared in a saucer, and, by means of a pad of old linen or flannel, rubbed upon the surface of the plates in turn. When the last has been so treated, the plates are turned over, and the acid applied to the reverse sides. Many photographers immerse their plates altogether in acid, but this is an operation which I do not recommend, inasmuch as more acid is required, and the purpose to be effected (viz., the solving and removing of the dirt and grease) is much more perfectly performed by rubbing to and fro upon the surface.

When the last plate has been treated with acid, I lay them all (beginning at No. 1) in a large vessel of water, changing the latter once or twice, and washing the plates separately with a cloth. If the plates have been properly washed, the water will flow equally and without impediment over their surface when removed from the vessel, and this is a sure sign of the absolute purity of the plates. The principal part of the operation follows next, viz., the drying, which must be very carefully attended to, for it is only possible to obtain a perfect result when the whole surface of the plate is damp; if the glass has dried in places before being rubbed with the cloth, the result will be imperfect. The old linen used for drying and polishing ought, previously to its employment, to be boiled with soda crystals, for the purpose of removing any grease contained in the fabric. Two or three of the plates are placed to drain upon filter-paper, but should not be allowed to stand long before being taken in hand upon the drying-table, which is covered with several thicknesses of linen, worn soft and porous by long usage. Several pads of soft linen are laid convenient to hand, and with the first the greater part of the moisture is removed from the glass placed upon the table convex surface uppermost; the plate is then quickly shifted to another and drier part of the table-cover, and, with a second cloth, rubbed briskly and heavily until all trace of moisture has disappeared. The glass is then reversed, and the same operation repeated.

It is important that the operation of drying should not be completed at the spot where the plate is first laid upon the cloth, as the latter, being damp at that point, will moisten the second cloth used, which will thus be incapable of drying the glass surface Plates cleaned in this manner are in every way ready for use, but may, if it is considered desirable, receive a further polish with collodion or alcohol.

Old plates should be cleaned by immersion in water, and washed without employment of acids, and then cleaned in the same way as new ones. If the old plates have been varnished they must be placed for twelve hours in hot, strong soda lye, and then cleaned, also without acids. Care must be taken to remove the old collodion attaching to the edges, which is best done by means of a piece of soft leather.

The cleaned plates are best stacked close against one another, without any insertion of paper between them.

COLLODIO-BROMIDE PROCESS.

Effect Produced by Variations in the Collodion.

BY M. CAREY LEA.*

The whole collodio-bromide process is still so new that we have little or no positive information as to the effects traceable to variations in the composition of the collodion. We know, however, that the same rules that govern the ordinary wet process do not prevail in the collodio-bromide, and it consequently follows that all our knowledge of such detail must be obtained by diligent and careful study; only so can we build up this branch of photography, and lay all its advantages open to the intelligent photographer.

The following examinations were entered into with a view of endeavouring to make out the influence, first, of different saltings; second, of varying the proportion of alcohol and ether.

I.—*Effects of Different Saltings.*

Three collodions were made by the following formulæ, and were placed aside for a month to ripen.

1.—In each ounce of solvents were dissolved—

Bromide of cadmium	12½ grains
Bromide of ammonium ...	2 ,,
Pyroxyline	6 ,,

2.—Potash collodion. In each ounce of solvents—

Bromide of potassium	1 grain
,, ammonium	3 grains
,, cadmium	8 ,,
Pyroxyline	6 ,,

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* *Photographische Mittheilungen.*

† Only plate glass is perfectly flat, the other descriptions being bent in a slight curve, which increases with the size of the plate. For this reason, in order to obtain sharp definition, the convex side should be used for the reception of the image, as this surface approaches in form to that of the lens.

* *Philadelphia Photographer.*

3.—Zinc and potash collodion—

Bromide of zinc	1½ grains
„ ammonium	1 „
„ potassium	1 grain
„ cadmium	6½ grains
Pyroxyline	6 „

The first of these collodions, after ripening for a month, was sensitized with 30 grains nitrate of silver to the ounce; the second and third with 20 grains, as they contained a proportionately less amount of bromides.

Although bromide of potassium has very little solubility in alcohol and ether, yet this slight solubility is very materially helped by the presence of the cadmium and ammonia salts. It is, therefore, a very great mistake, in mixing any collodion in which any potassium salt finds a place, to attempt to dissolve the respective salts separately. The proper plan is to place them all together in a large test-tube or small flask, and to pour alcohol over them. Heat is to be applied with care, to avoid accidents, and the potassium salt is got into solution by virtue of the other salts, with which it appears to form double salts of materially greater solubility than that of the bromide of potassium alone.

I may take this opportunity of mentioning a fact of considerable interest to workers in collodio-bromide: it is, that when it is desired to have a newly-mixed collodion ripen as soon as possible, the collodion, instead of being placed in a cool, dark spot, should stand in a warm, well-lighted room, in order that the salts which it contains may be made to react as quickly as possible upon the pyroxyline in solution, and bring about that condition which is so essential to success in collodio-bromide work.

When these collodions had stood a month, they were sensitized with nitrate of silver, and a set of plates was made, to which exactly equal exposures and equivalent developments were given; and the following facts, which will have considerable interest to collodio-bromide workers, were clearly made out:—

1. The addition of even so small a proportion as one grain to the ounce of potassium salt exerts a perfectly well-marked influence upon the collodion. This ripens with considerably greater rapidity, and, at an earlier period, gives images free from veiling and with the necessary density. But the collodion is distinctly inferior in sensibility; it therefore gives stronger contrasts and more brilliancy, but less softness and less detail in dark shadows, and in the less illuminated part of the picture generally. On the other hand, it shows less tendency to fog.

A difference produced by this very small proportion of potassium salt and one which could not in the least have been anticipated, was produced. This was a much increased tendency to osmotic action; *i. e.*, penetration of the film by the liquids employed. This effect varied with different preservatives. With some it rises to such a pitch that when the plate was plunged into the alkaline developing bath, in half a minute the plate appeared covered with round, dark spots, darkest in the middle, and shaded off to the edges; these were from one-tenth of an inch up to half an inch diameter, and so near as to touch each other. Apparently the plate was ruined, but in the later operations these disappeared, and left no trace or stain behind. They consisted of developing liquid which had forced its way through the film, and had collected in these flattened drops, flattened by the pressure of the film against the glass. When working with collodions containing only cadmium and ammonium salts, even in very various proportions, nothing of the sort had ever presented itself. This action seems, therefore, to be a characteristic action of the potassium salt.

Action of Zinc.—I was induced to test the action of bromide of zinc from the following circumstance: an intelligent photographic friend, whilst lately travelling in Europe, met with some remarkably fine specimens of copying work, which he purchased. In a conversation with the maker, the latter stated that he used bromide of zinc in his collodion, and that, without this addition, he found it impossible to get such good results in copying oil paintings. The proportion used varied with the circumstances of the case, depending upon the greater or less actinic power of the colours in the picture, but, if I recollect aright, was mostly about one-tenth the whole salting.

Without conceiving that there exists much resemblance between copying oil paintings and collodio-bromide dry work, the above seemed to point to some distinctive influence of bromide of zinc; I therefore included it in my trials. But the result was markedly unfavourable. It was, indeed, curious to see how much influence these trifling additions of other bases produced. Plates made with the zinc collodion were very decidedly less sensitive, and they showed a tendency to produce small hazy spots, not met with at all in using the other collodions.

Rejecting, therefore, totally the zinc collodion, the question narrows down to the advantage or disadvantages of the addition of one grain to the ounce of bromide of potassium. And I think this addition may be useful when it is desired to have newly-mixed collodion in order at the earliest possible moment for use. But, when time can be given to the ammonium-cadmium collodion to ripen fully it will deserve the preference, by reason of its greater sensitiveness and detail in the shadows, and its much less disposition to blister.

II.—*Influence of Alcohol, Ether, and Water.*

When a collodio-bromide collodion is extended over the plate, it has to carry with it a body of bromide of silver, which adds materially to its viscidity, and requires a somewhat greater care in the work. The smooth extension of the liquid will always be more easily effected when the materials are free from water than when the alcohol and ether are of lower grade.

With respect to the relative proportions of alcohol and ether, my experiments brought me to the conclusion that the proportion of alcohol could not be increased beyond that usually employed—equal parts of each—without manifest disadvantage. The tendency, latterly, amongst wet operators—some at least—has been to give a preponderance to the alcohol, in the belief that greater detail in the shadows was thus obtained. However this may be in the wet process, it is certain that when a collodion is mixed with alcohol two parts to ether one part, such a collodio-bromide is very difficult to coat a plate with, without getting crapy lines and a more or less structural film. It is certainly not impossible to obtain a perfectly structureless film with such a collodion; I have succeeded in doing so, but it is more difficult, and there seems to be no object whatever gained by such a change. It is, therefore, probable that the equal bulks of alcohol and ether now commonly used will continue to be recognized as the most useful proportions.

When it is deemed advisable to use bromide of potassium in making the collodion, it is hardly necessary to say that it should be reduced to fine powder before attempting to dissolve it; this is not necessary with the other bromides.

LIME TONING.

BY WILLIAM TERRY.*

Some two years or more ago I commenced using a concentrated stock solution for convenience, made of solution of chloride of lime and gold, and also one made of a peculiar combination of hypochloride of gold with hypochlorite of lime and chloride of calcium; this last I considered a great success at the time, on account of its brilliant tones and its superior keeping qualities. The concentrated solution was of a deep orange colour, a much more brilliant tint than the same strength of solution of chloride of gold; it did not deposit insoluble subchloride, as a strong solution of neutral chloride of gold is apt to do on standing, especially if exposed to light. The mode of preparation of this salt I do not give, as I have abandoned its use for reasons hereinafter mentioned. In toning with either of the above-named compounds it was only necessary to add about two drachms of solution to half a gallon of pure water, when it was ready to tone, and might be used over and over again by simply adding a small quantity of stock solution a short time before using. In fact, it would give still more brilliant tones after having been used once or twice.

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* *Humphrey's Journal.*

So much for its convenience. Its economy may be judged from the fact that the before-mentioned two drachms of stock solution contained less than one grain of gold, and was sufficient to tone between eighty and one hundred card pictures.

Now for its defects. After using from this stock solution for some months I began to find it necessary to use great care in the selection of my albumen paper, paper prepared with adulterated albumen becoming more difficult to tone. Very poor paper would persist in retaining a reddish tone in the gold solution, and, on being transferred to the hyposulphite, would immediately change to black, and fade to a miserably dingy hue. Prints on good paper, from a strong negative, would still tone rapidly and brilliantly; but the shading of vignettes began to be defective, the background fading to an unpleasant tint, inclining to yellow in the lighter shades, although the head might be as bright as usual. I soon traced this difficulty to the changes time had produced in my stock solution, although it had not changed in appearance, being still the same colour, and without any deposit or sediment; and after numerous experiments I became convinced that no compound of gold which promises toning properties can be relied on to keep in its best condition for any great length of time; even neutral salts, like the chlorides of sodium and calcium, appeared to be more or less injurious.

I consider it best to keep a stock solution of slightly acid chloride of gold, which can be depended upon to be uniform in its action, and to add of this the requisite quantity to the toning bath every day some hours before using.

Every good operator can, of course, produce excellent results with any of the common toning baths; but my experience is decidedly in favour of the chloride of lime when understandingly used, for brilliancy of tint, clearness of whites, convenience, and economy. It is, of course, more economical to use a bath which can be repeatedly used, rather than one which must be made up every day; chiefly because it is necessary that the bath should still be in good condition at the end of the operation, otherwise the last prints toned will be inferior; consequently a considerable amount of gold remains in the bath, which will count upon the next day's work.

If a toning bath made with bicarbonate of soda, or phosphate, &c., be used to tone a great number of prints, it will turn, on standing, to a purple or wine colour, more or less deep according to age; in this state it has very little toning power. Now if a few drops of solution of chloride of lime be added, a purple precipitate is thrown down; allow it to stand a few hours—or, better, days—until perfectly clear, then carefully decant from the sediment, and add a small quantity of solution of neutral chloride of gold, and it will be found to tone excellently. The addition of a few drops of chloride of lime solution to either of the above-mentioned baths after using will prevent the formation of the coloured compound, and retain the working qualities of the bath.

I do not favour the accumulation of chloride of calcium in the bath; for this reason I prefer to neutralize the gold with bicarbonate of soda, and also to add a few grains of phosphate of soda occasionally to remove the lime or calcium. I make a stock solution of bicarbonate of soda of such strength that a given quantity shall be sufficient to exactly neutralize a given quantity of stock solution of gold. I make up my bath with bicarbonate or phosphate of soda, or both combined, or chloride of lime, whichever will answer my purpose best at the time. After using I add a few drops of solution of chloride of lime, and pour the bath back into the bottle to settle over night; in the morning I decant the clear liquid carefully into my toning dish, and add sufficient gold solution for my day's work, and also soda to neutralize; after toning, repeat the lime, &c., as before. After using a few times, as the chemicals accumulate in the bath, I dilute with pure water. A large excess of chemicals is injurious; the bath requires only a few grains to the gallon.

I have indicated the principle on which I think this bath should be worked to be successful and economical. The quantity of chloride of lime necessary is very small; any excess is injurious, and will cause mealiness. It is useless to give precise quantities, because commercial chloride of lime is uncertain; the amount of hypochloride it contains is variable, consequently it must be used with judgment.

I think any one who becomes familiar with the working of this bath will be pleased. The brilliancy of tint is also noticeable in porcelain pictures, especially if printed on collodio-chloride, made after directions given in my communication which you published some time since. For toning porcelain prints the bath should be diluted with three or four times its bulk of water.

I do not believe that a toning compound of gold can continue in its best condition for any great length of time, as I before said. This belief is founded on very many experiments, and is contrary to my previous opinion. I found that the compound hypochlorite would keep so long, and I hoped it might keep indefinitely. It will certainly keep longer than any other toning compound of gold I have tried. Other compounds soon begin to deposit gold; this does not. But after passing a certain point it deteriorates; consequently I think the method I have described is best calcuated to keep it in its best condition.

I prefer a rather weak bath—that is, one containing not more than about 1 grain of gold to the quart; if much stronger than this it will tone so rapidly, if in good condition, that the prints are in danger of over-toning, at least on the surface, before they can be taken out, if there are many toned at once. I do not wish to be understood that this is the case with all toning baths, for I have sometimes seen operators at work with a bath containing over 30 grains of gold to the gallon which toned more slowly and imperfectly than the above-described bath should do when of a strength not exceeding one grain to the gallon.

The action of light on solution of nitrate of silver is well shown by an experiment which I tried many years since. I placed a bottle containing a nearly saturated solution of crude nitrate of silver on a shelf in a south window. The solution was made for the purpose of preparing fulminating silver, and was simply coin dissolved in nitric acid, containing, of course, all the copper of the alloy, and also decidedly acid. After remaining exposed to sunlight for several months, I noticed a formation of needle-like crystals in the liquid and upon the glass; this I thought indicated the formation of nitrate of silver; I concluded to try its qualities as a sensitizing bath. Accordingly, I diluted and iodized it, coated and exposed a plate; on pouring on the developer the image appeared to start out in all its details almost instantaneously. It proved to be remarkably sensitive, but was useless for positives, for no matter how short the exposure the lights were invariably overdone and solarized. This was before the days of card photographs, and I did not try the action on a negative. I think, however, it would have produced intense negatives with short exposures.

I have always intended to experiment further on the nitrite of silver and analogous salts, but have been prevented by various causes, among which is the trouble of procuring the nitrite of silver.

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Recent Patents.

IMPROVED HEAD AND WAIST RESTS.

BY W. WEBSTER AND R. W. BARNES.

The following specification was only provisionally entered: —

The head and waist rests hitherto used in photographic studios have been of a cumbrous form, and there has been considerable difficulty in moving them into position to afford the required support for the person; indeed, the practice has been rather to pose the subject to suit the rest than otherwise.

The object of our invention is to provide mechanical rests so constructed that they can be easily adapted to the varying requirements of height and position, and expeditiously brought into place to provide the necessary support after the desired attitude has been taken. For this purpose we employ a horizontal bed or carrier of considerable length, and place thereon a sliding block, whereto the rising stem is affixed. The said sliding block is caused to traverse on the bed or carrier at will, a toothed wheel supported by it and provided with an operating handle geared with a rack formed on the bed or carrier, or a screw passing through the block, or their mechanical equivalent, being employed therefor. That part of the rising frame which is affixed to the sliding block is formed with a groove or recess, and a bar or rod, of an angular, vee, or other shape in section, is fitted so as to be easily moved up and down therein, set screws or other holders being employed to secure it at the required height. At or near the top of the said bar or rod the caliber supports or rests are attached; and to admit of their being moved backwards and forwards at a right angle to the length of the bed or carrier, they are borne in a sliding piece, and, when desired, a hinge or joint is provided, so that they can be moved round sidewards.

Our invention also consists in affixing the rising stem of head and waist rests already in use, or of the ordinary construction, to the said sliding block when it is supported on the said bed or carrier, and operated as described.

IMPROVED FRAMES FOR PHOTOGRAPHS, ETC.

BY J. F. A. A. ROUSSAUX AND L. VINCENT.

The following invention received provisional protection only:—

This invention consists in the application and use to and in the manufacture of frames or holders for containing photographs, miniatures, hairwork, pictures, or engravings, and other like articles of moulded glass or porcelain, either plain, coloured, or more or less ornamented, in substitution for wood, metal, or other materials hitherto employed in the manufacture of picture frames or holders.

In carrying out this invention the glass or porcelain employed is introduced whilst in a soft or plastic state into a metal mould of the required design, wherein the newly introduced glass or porcelain is subjected to pressure, in order to consolidate it and cause it to enter all the ornamental or other interstices in the mould, and form a sharp casting. This mould is by preference composed of two parts hinged together, the one half containing the matrix for the front part of the frame, whilst the other may be provided with a plain raised surface or projecting face for the formation of the rebate in the back of the frame. Before casting, the two halves of the mould are closed and held securely together by any suitable fastening, and so soon as the glass or porcelain has been introduced through an opening left for that purpose, a piston or ram is forced into the said opening in order to compress or consolidate the same inside the mould.

ALBUM FOR EXHIBITING A SERIES OF PHOTOGRAPHS.

BY FRANCOIS VITE.

The patent for the following invention was not completed:—

The invention consists in the construction of an album or case to contain pictures, and especially photographic pictures, in such manner that all the pictures contained in the album or case shall be successively exposed to view, and that without the necessity of turning over leaves or the pictures being subjected to the action of the atmosphere or liable to get dirty as heretofore.

The album or case consists of an oblong or other shaped frame, having a groove or grooves in the sides and near the lower part thereof, in which a metal frame with clips formed on it is free to slide to and fro. An india-rubber band or metal spring is connected to this frame, and which passes through a slot to the outside of the box. Supposing the case is intended to contain a series of pictures where only two are exposed to view at one time, and these side by side, the case is divided by a partition into two parts or compartments, sufficient space being left between the lower end of the partition and the bottom of the case for the passage of a frame in which each photograph or other picture is placed. The base of one portion of the case is provided with studs or buttons having springs below them. Now, if a picture is placed in the first compartment and the india-rubber band or metal spring is pulled by a loop outside the case, the clips on the frame draw the picture along beneath the partition and on to the spring studs or buttons, and if there were a series of pictures resting on that which has been withdrawn, the next above drops and occupies the position of that which was withdrawn. By pulling and releasing the spring, the pictures are thus withdrawn from one compartment and placed in the other, and, by continuing to pull and release the spring, this action will go on until the second compartment is full; when this is the case, a second clip or clips sliding in conjunction with the lower clips, but at the top instead of the bottom of the compartment, seizes each picture as it rises, and, as the spring contracts, the picture goes back with it to the first compartment, and so all the pictures in each compartment are successively exposed to view. The tops of the compartments containing the pictures are covered with a sheet of glass.

PORTABLE APPARATUS.

BY J. M. DOMENECH AND F. P. JONTE.

The following extract from the provisional specification will best describe the object of this invention. The complete specification enters into detailed reference to extensive diagrams deposited at the Patent Office:—

These improvements relate more particularly to the apparatus employed in out-door operations, and their object is to combine in one portable and convenient package the whole of the apparatus now used separately and independently. To this end we construct a package which can be carried on the back by straps. This package contains the camera with all the requisites for taking a view or portrait, as well as chemicals and materials for preparing, developing, and fixing the plates. A flexible cloth covers the entire apparatus, as well as the operator, and serves the purpose of a tent, and through which we admit sufficient light of a non-actinic character by causing it to pass through glass or other coloured media. The box is so constructed that on fixing it upon the tripod-stand it at once opens out into a large and convenient tent, with the lens and camera attached in front. The operator takes up his position inside the tent, and before him is the camera, which he can open or shut. His stock of glass plates are over the camera, as well as a cistern of water. On his right hand are the chest or shelves containing the chemicals, and at his left the nitrate bath, and before him the tray to receive the waste in washing. Every requisite for preparing the plates, putting them into the camera, exposing them, developing, and fixing the image can thus be accomplished without moving from the spot, the whole apparatus being contained in a large, well-ventilated, non-actinic lighted chamber.

Correspondence.

STORING NEGATIVES.—MR. SARONY'S PROCESS.

Dear Sir,—Some time since, when visiting a friend who is a skilful professional photographer, I noticed that he had a way of storing C.D.V. and other negatives in many respects better than other modes, and I have no doubt he will excuse me bringing it before the readers of the News.

Finding that numbering them and numbering the backs of the mounts was troublesome and uncertain, he adopted the plan of enclosing each negative, soon as done, within an envelope, and writing each person's name and address on the spare end of the envelope; then these are stacked one on the other, and arranged alphabetically, and the shelves being divided for ladies, gentlemen, and groups, made the finding of a negative an easy matter. The envelopes being a little longer than the quarter-plate, leave a margin for writing upon. Amongst the many plans in use by photographers, this appears to me the simplest and best.

Mr. Sarony has offered us a new style of portrait, which, I hope may prove a benefit to those who can give it a trial; but £5 for an experiment depending upon the chance of return is, to many, too high a figure, and will induce many persons to try for some other means to secure the same appearance. If Mr. Sarony could supply a few of the mounts on which the effect depends, many would try the new style, and not begrudge the moderate price of (say) 2s. each for the lithographs, provided a small number could be had.

I suppose Mr. Sarony's patent does not prevent one trying the effect of coloured crayon paper behind landscape transparencies.—Yours truly, Thomas Gulliver.

18, *Union Street, Swansea.*

THE NEW PHOTO-CRAYONS.

Sir,—Every one seems to admit that the new style of portrait introduced by Mr. Sarony is both good in itself and likely to please the public; and since his plan is to place it in the hands of the profession on easy terms, I scarcely think it is in good taste to question his right to patent it, especially as none of the objectors seem able to point out where, when, or by whom such pictures were produced before. I for one thank him for aiming to keep a good thing out of the hands of the cheap and nasty school.

There is one question of importance to some of us which I should like to ask. Is it intended that all photographers taking licences must work the 14 by 12 size? or will the crayon vignette backgrounds be produced in other sizes—cabinet, whole-plate, 10 by 8, and 12 by 12 sizes, for instance? I think that Mr. Sarony will do a service to the profession, without injuring himself, if he will supply various sizes of background cards to meet the necessities of demand.—Yours, A Portraitist.

[We believe that Mr. Sarony will eventually supply other sizes; at present, we understand, he is able to prepare only the standard size, which he has found effective. The vignette backgrounds already prepared will probably answer for 12 by 10 plates if required.—Ed.]

Sir,—The discussions which arise when any novelty in photography is patented are rather calculated to bewilder simple, straightforward people who are desirous of doing the best for themselves without wronging others. If Mr. Sarony has taken a great amount of trouble to introduce a new style of picture which, on examination, is found to be public property, and, therefore, cannot be protected by patent, so much the worse for him; but whether better for photographers or not seems at present uncertain. But if the process be an old one, as some seem so confidently to maintain, why do they not bring forward the specimens of it? Surely it is as easy to show specimens in a society meeting as to make loud protestations. But if these specimens are not forthcoming, it seems a little too bad to disturb the public mind by doubts, which, if they tempt some foolish persons to infringe a patent, might turn out dangerous.

I see in a contemporary a correspondent writes to the effect that Urie and Ashton both have patents for precisely the same thing as Mr. Sarony has just introduced. Now, as Urie's patent and Ashton's patent are for two distinct and totally different things, it seems evident that the correspondent in question is talking nonsense for the purpose of doing mischief. I practised Urie's process about fourteen or fifteen years ago; it simply consisted in putting black varnish over the figure in a collodion positive, and putting something else behind the figure. Ashton's patent is especially for a mode of applying chromo-lithography to Mr. Woodbury's prints, I understand. I do not think that either of these patents affect us much at present; but is there any other to justify the outcry of those who state the thing is old? For my own part, whilst I should like the question set at rest, I do not think it matters much, for I fancy that without any patent Mr. Sarony will find demand for the clever vignette backgrounds he has offered at a cheap rate. I presume that it would not be an infringement of the patent to back a transparency with a piece of plain paper, as I have often done that with collodio-chloride prints taken on glass.—Very truly yours, Zeta.

MR. SARONY'S PHOTO-CRAYONS.

My Dear Sir,—I see from last week's News, Mr. Fry is somewhat disposed to dispute Mr. Sarony's right to *patent* his "photo-crayons;" and at the South London Society's meeting there appeared a disposition to dispute its novelty. Is it not very like Columbus making the egg stand on end? I have, for instance, for three or four years been producing the very same kind of positive in my Eburneum process, and have backed enlargements with paper; but with the simple alteration of using crayon paper, and allowing the positive to remain *on the glass*, we have an entirely new style of portrait. It is somewhat singular that my process which gives the utmost delicacy attainable, and this which gives all the freedom and force of a good crayon drawing, should be so closely allied in the manner by which it is produced.

I will send you a specimen of my own production. I have not yet had the pleasure of seeing one of Mr. Sarony's.—I am, sir, yours truly, J. M. Burgess.

[In reply to many letters, asking Mr. Burgess for guidance in applying his mode of producing transparencies as applicable to this photo-crayon process, to which it is impossible to reply personally, Mr. Burgess supplies a few brief hints, which we will publish next week.—Ed.]

PRELIMINARY COATING OF ALBUMEN IN WET PLATES.

Dear Sir,—In your last number Mr. Fry mentions his experience of the preliminary coating of albumen given to the plate in the wet process. For the last two years I have practised that plan, having first noticed it in an extract from *Humphrey's Journal*, and would not now willingly give it up. In coating the plate I proceed somewhat differently to Mr. Fry, and, I think, in an easier manner. I wash every plate, old and new, after passing it through the acid, very carefully below the tap, and while the plate is still wet pour on the albumen. There is then no difficulty whatever in coating the plate with it. I do not throw away what drains from the plate, but pour it in a filter which stands in a bottle at hand, and use that when I require it. It certainly thus gets very dilute, but up to one in forty I have as yet seen no difference from one in ten. The ridges that Mr. Fry found to form on the plate might possibly be the consequence of the thickness of one in ten on a dry plate. At all events, I have not found any temperature in particular assist or retard me in any way in coating.

Before pouring the collodion on the plate I carefully clean the back and edges from any albumen that may be on it, and I am not aware that my bath has suffered in the slightest degree from its use in this way.

While saving me from many troubles, I find one trouble of its own. When the plate was drying after pouring on the albumen, unless I carefully separated each plate from its fellow by the corners only—that is, prevented the top of the plate from touching in its whole length the one next to it and under it—I found streaks frequently, not always, down the centre of the plate on developing. Now, when they do appear, they are close at the sides only, and of little consequence.—Yours obediently, Kent.

Gravesend, March 22nd, 1869.

Proceedings of Societies.

South London Photographic Society.

At the meeting on the evening of Thursday, March 11th, Mr. Sebastian Davis in the chair, at the conclusion of the discussion on Mr. [illegible]'s pictures, reported in our last, in response to a [illegible] from the Chairman,

Mr. Taylor opened the discussion of a question (from the Question-Box) as to whether the wet or dry process was best for a landscape photographer to employ exclusively. He said that the subject was one on which, from one point of view, but little could be said, and yet, from another, might open up so many questions that the time at their disposal would not suffice to have them discussed. Which was best, the wet or dry? What were their several specialities? What advantage had one over the other? And which of these specialities could compensate for the loss of other features? The best process was that in which there was a preponderance of advantages for the purpose the photographer had specially before him. In the two great divisions of photography, wet and dry, as in [illegible], there was no gain without a corresponding loss. He would first of all state the case on behalf of the wet. There was the greatest rapidity attainable in photography—the pleasure or satisfaction of seeing and knowing for a certainty what one has got, implying the facility for taking several views of the same subject, each, if necessary, varying in pictorial or chemical treatment so as to enable the artist to return from the spot replete with negatives of every class required. In his operations, the wet-plate worker could lay to heart and reduce to practice the precept in the nursery rhyme—

> "If you don't at first succeed,
> Try, try, try again."

That was the wet process in its holiday dress. The dry process implied freedom from tents or other cumbrous impedimenta. The apparatus was reduced to a minimum, the photographer dismissed all perplexing thoughts concerning the state of his chemicals or the chances of failure, and concentrated his whole thoughts upon the one idea of selecting and composing his view. Knowing that his plates and chances were limited, he selected his views with special care; with [illegible] it had to be a dead shot. The knowledge of his limited sphere of experiment engendered habits of care and thoughtfulness in composing his pictures, and led to the acquisition of a degree of skill and tact that would not otherwise have been obtained. This was a point to which he invited special attention. He assumed that the photographer was quite a master of his process. He then proceeded to "pit" the wet against the dry. In the field the wet was cumbrous, sloppy, and troublesome; the dry simplicity and pleasure itself. In the field and away from home, more than at any other time, did the bath get disordered. He had last summer seen a member of the Amateur Field Club with one leg of his tent-tripod deranged, his tent being supported on two legs and tied to a tree. On that occasion, as if acting in sympathy with the mechanism of the apparatus, the inveterate tendency of the bath to give nothing but foggy pictures impressed upon the artist the truthfulness of the adage that misfortunes never come singly. The troubles of that day made a convert to dry-plate work of the friend alluded to. But when everything went right, then the wet process had the advantage. Its rapidity was a feature not to be lightly estimated. Were a landscape to be taken with figures, were rocky cliffs or sea beaches to be taken with breaking waves, were a street to be taken with its busy traffic, were rapidly drifting clouds wanted to be arrested in their course—where would dry plates rank in comparison with wet? Some years ago he was in the Orkneys, and although he had dry plates, he much regretted the want of a portable tent, by which he could have secured sea views of a charming kind. In preparations for a similar trip he had had a small but very complete portable tent made, in which he could operate with plates 7½ by 5. He purposed using this in addition to dry plates, for (and here was his answer to the question of the evening) to ensure the best possible results both wet and dry plates should be employed. Dry plates were said to have been got as rapid as wet. He had obtained them very nearly as much so; but in proportion as rapidity was increased, so were drawbacks, difficulties, and uncertainties. Concerning quality, he did not think that in delicacy or atmosphere one process had much, if any, advantage over the other. Dry plates had generally yielded hard pictures; this arose from under-exposure, over-intensification, or the deception arising out of the non-actinic colour of the deposit, especially when albumen played a part in the preparation. He anticipated much from the process of Mr. Russell M. Gordon, because, from the absence of that deceptive element, the photographer would be better able to appreciate the true actinic density of the negative, which in this respect is similar to that by the wet process. The difficulty of carrying about a tent had been happily met by some of their members, who had wheels (which could be removed at pleasure) attached to their tents. Velocipedes were suitable for carrying photographic luggage, and they possessed the advantage of also carrying the photographer himself. He once saw and envied a gentleman dash past him on the road on one of these vehicles. He (Mr. Taylor) had his camera only, and was proceeding at the rate of four miles an hour. The gentleman in question had a large and heavy-looking tent in addition to his camera, and went easily and jauntily forward at ten miles an hour. He had thrown out these several floating ideas on the subject in the hope of inducing a discussion on one or more of the topics referred to.

The Chairman, in thanking Mr. Taylor for his observations, spoke of the importance of having a convenient method of transporting the tent and apparatus from place to place. The addition of movable wheels to a tent he considered as highly advantageous, and he described the mechanical arrangements he himself had adopted. At the request of the meeting he promised to bring his tent for exhibition at their next meeting.

Mr. Blanchard suggested that all their members should do the same.

Mr. Howard said that the question before them for discussion was one of the most important that had been introduced. The dissatisfaction of amateurs with the wet had led to the introduction and perfection of the numerous dry processes in existence, and they had laboured most strenuously in the dry, the stimulus being the difficulties attendant upon working wet collodion in the field. He had worked much with both wet and dry processes, and had arrived at the conclusion that such good results could not be obtained by the dry as by the wet process. In photographing a simple landscape with figures, as well as in obviating other little circumstances, such as the movements of foliage by the wind, the wet had decided advantages. The want of actinic power in the green subjects necessitated a long exposure to obtain them properly; short exposures for landscape work, with dry plates, were rarely very successful. The question of wet-plate work for out of doors had yet to be discussed and practically carried out by amateurs. Were they to devote their earnest attention to it he believed that they would improve the apparatus very much. Their tents were still more heavy and cumbersome than they might be, and, in connection with that, a waterproof covering of silk might, he thought, be advantageously introduced, and which might be made to fold up like a map. With respect to transport, wheels were necessary on the tent of the photographer who wished to work the wet process with advantage and enjoyment.

Mr. Foxlee said that a knapsack was a good form in which to carry a tent.

Mr. Howard further remarked, that on looking over the portfolio of a dry-plate photographer the first thing that struck one was the absence of all life, this being the consequence of the long exposures required. Wet plates would have to be used by every person who wished to achieve success. He also thought that if there was more speciality in the works of photographers—that is, if each were to devote much of his attention to a certain branch of operation—it would be more satisfactory, and would conduce to eminence.

Mr. Blanchard was glad that the question had been introduced. He entertained very positive opinions in favour of wet-plate photography. His first out-of-door negatives were taken with wet plates and pyro. development in a cumbrous tent. Fothergill then having introduced his process, he tried it, and his troubles commenced. He was well aware of the many excellent works that had been produced by dry plates, by the collodio-albumen process in Manchester, by the process of Mr. Gordon, who was ahead of them all, by England, Howard, and others; he had, however, to say that in spite of the beauty of England's dry plate views, his wet ones were still better. When the exposure of a landscape exceeded a couple of seconds they got a peculiarity which was not true to nature; and if this were the case with an ordinary landscape, how much more so would it be in the case of extraordinary subjects, such as those showing effects of wind, motion, waves, &c. Having tried both, he would much rather work the wet than the dry. Such subjects as architecture could of course be well obtained by dry plates.

Mr. W. H. Price thought that when an amateur, during an occasional holiday, combined the pleasure of seeing the country with taking photographic reminiscences of the places and scenes visited, there could be no doubt that the dry process afforded very great facilities when compared with the wet. Amateurs once did not usually ride the photographic hobby to such an extent as to sink all other enjoyments when abroad. For securing a few pictures around London he might take his tent, and thus get a number of very fine negatives; but the case was quite different when he went on his annual trip. To enjoy travelling, and escape being a slave to photography, a dry process was indispensable. Even though the views obtained were not absolutely faultless in the eyes of those by whom they were taken, they would be beautiful by association, and recall the reminiscences of the trip. With a tent they must go in for photography only, and largely sacrifice the pleasure they would have in seeing the country; and as amateurs generally travelled for pleasure, such a plan would destroy the whole purpose of the trip.

The Chairman thought it quite certain that all could not be expected to arrive at the same conclusion on this question. If the very best and most natural effects were wanted in a landscape—such as cattle feeding, &c., requiring rapid exposures—better and more varied results could be obtained from the wet than from the dry; but for securing with comfort mementos of a journey and special scenes, the dry process had many advantages; and he was pleased to see in dry processes day by day and week by week a growing advancement in their perfection for most purposes.

The proceedings then terminated.

Talk in the Studio.

Another Carbon Process.—We have just received from Mr. Blair, of Perth, another curious and interesting example of carbon printing. Possessing fine gradation of half-tone, good contrast by reflected light, it possesses the peculiarity of resembling a negative by transmitted light. The lights and shadows possess nearly the same opacity, but the deepest shadows look most transparent when examined by strong light, the general effect being not unlike that of a fogged negative. At present the method is in an experimental stage, and no details are ready for publication.

Photography for Printing Fabrics.—We notice in a recently issued draper's circular, in a paragraph enumerating various fancy goods for ladies' dress, one of the most prominently mentioned articles is "the Ardtulley Dress, printed by Photography."

Royal Cornwall Polytechnic Society.—The annual report has just been issued. The judges in the photographic department were W. Naylor Carne, Miss Feuwick, Miss A. M. Fox, T. Hart, G. Lanyon, Jas. G. Philp, and J. St. Aubyu, M.P. We have already published awards and report. The chief point of interest now made clear is the fact that the award for photographic enamels was made to the frame of *coloured* enamels exhibited by Mr. Barnes.

Collodio-Bromide Negatives.—We have been favoured by Mr. Carey Lea with some of the results of his experiments in dry-plate photography. A charming 8 by 6 landscape, of a by no means easy subject, being a "close scene," containing both foliage and water, both of which received justice, is from a collodio-bromide negative. The plate was prepared in March, 1868, and exposed in September, 1868; and, after six months' keeping, the technical qualities seem perfect. This is by the process Mr. Lea described last year, in which the plate is immersed without washing in a bath of acetate of lead and gallic acid, details of which will be found in our Year-Book. Another plate by the same process is just as perfect, rendering foliage with especial delicacy. Mr. Lea promises us some examples shortly of his rapid collodio-bromide process. A fine landscape on a 10 by 8 plate is described as by the wet process; the plate was kept two hours, and travelled twelve miles, between exciting and development. The result is perfect.

Economical Modification of the Lime Light.—We understand that Mr. Darker has recently been engaged in some successful experiments for using the lime light without the aid of oxygen, or, rather, without the aid of other oxygen than that contained in the atmosphere. The arrangement is similar to that used with the oxyhydrogen light, but, instead of a stream of oxygen, a stream of atmospheric air is forced into the flame, where it plays on the lime cylinder, and an excellent light so secured, only inferior to that obtained by the use of oxygen. It will be seen that safety as well as economy are secured by this arrangement.

Photo-collographs.—We have been favoured by our friend, Dr. Vogel, with some prints by Mr. Schwab, of Hauover, taken from a chromo-gelatine film, as employed by M. Tessie du Motay and M. Albert. The prints possess good half-tone with very little granulation. This process appears destined to produce important results in rapid photographic printing. Rumour states that M. Albert's process has been tried in Paris with much less success than, considering the claims made for it, had been anticipated.

New Copyright Bill.—A bill intituled "An Act for Consolidating and Amending the Law of Copyright in Works of Fine Art," as presented by Lord Westbury, has been printed and distributed. The principal clauses of this proposed measure are thus described:—1. Commencement of the act, and repeal of existing acts. 3. Grant of copyright to authors of new and original works of fine art. 4. Author's studies, MSS., &c., to the extent of £15, not to be liable to seizure or sale during author's life. 5. Illustrations of books to be deemed part thereof. 6. When engravings separately published, proof to be delivered to the British Museum. 7. How copyright may be assigned, &c. 8. No action, &c., maintainable by proprietor of copyright until after registration. 9. Penalties where registered copyright infringed. 10. Various fraudulent acts relating to works of fine art prohibited. 11. Importation of piratical repetitions, &c., prohibited as to registered copyright works of fine art. 12. Commissioners of Customs publicly to expose lists registered copyright works of fine art. 13. Imposters, &c., of piratical copies to furnish names, &c., of persons from whom same obtained. 14. Justices of the Peace, &c., may grant warrants to search for piratical copies for sale. 15. Piratical copies found in possession of hawkers may be seized. 17. How penalties may be summarily recovered before two Justices, &c. 19. Penalties imposed not to prejudice other remedies to which proprietor of copyright entitled. 22. Plaintiff or defendant succeeding in action, &c., to have full indemnity for costs, unless otherwise ordered by the Court. 29. Not to repeal the Ornamental Designs Act. Clause 4 includes in the exemption an artist's "professional implements" in the cases of "distress for rent, or any execution against him to be levied on his goods and chattels;" and "no such sale of the sketches, studies, unfinished works of fine art, or MS. notes (without the author's consent) shall deprive him of copyright therein." Clause 9 is worthy of special attention on the part of artists who repeat their works. Among the acts which are scheduled with reference to clause 1 is "Hogarth's Act" (1767).

Transparencies on Wet Collodion without a Camera.—Dr. Vogel describes a method by which transparencies can be printed on wet collodion by superposition without injuring the wet film or the negative. "Imagine," he says, "a blackened tube (for instance, a stove-pipe twenty feet long, with a diameter of from six to nine inches); one end of the tube is open, the other one has an arrangement for receiving a plate-holder. In the plate-holder the negative is placed, the varnished side facing inward. Back of this is the sensitive plate. Four dots of sealing-wax on the negative plate will prevent the negative from touching the sensitive film. The distance will be one-half of a line. The far opening of the "stove-pipe" is now closed; the plate-holder is put in position; the shutter is opened, and, as the rays which fall on the negative are nearly parallel, the detail will copy sufficiently sharp. If we lengthen the pipe the picture will become more sharp, but the time of exposure will be increased also."

Relative Sensitiveness of Iodized and Bromo-iodized Collodion.—The question of the relative sensitiveness of simply iodized and bromo-iodized collodion, settled tolerably satisfactorily in favour of the latter years ago by practical men, has recently been again referred to in connection with the photography of the late eclipse. Mr. Carey Lea, referring to the opposite experiences of Dr. Vogel and Mr. Warren De la Rue, mentions that the latter gentleman found that a pure iodized collodion with a pyro developer was more sensitive to light than a bromo-iodide collodion, and Mr. Lea observed that this assertion was in conflict with the result of Dr. Vogel's experiments, which showed collodion sensitized with iodide of silver to be sensitive to strong light, while bromo-iodide of silver was sensitive to feeble light. Dr. Vogel, commenting on this, says :—"I had read the remarks of Mr. De la Rue previous to my departure for Arabia, and I was so much struck by them that I determined to make some experiments with his collodion and developer. For our object we selected the moon. Our instrument was our photographic telescope. We prepared an iodized collodion with a pyro developer, and also a bromo-iodized collodion with an ordinary developer: and what was the result? The iodized collodion gave a thick, hard picture, with strong, vigorous lights, but total absence of details in the shadows. The bromo-iodized collodion gave a picture not so intense in the lights, but much more detail in the shadows. We subsequently tried both kinds of collodion with the same developer, and obtained the same result. These experiments seem to confirm what I have said on a previous occasion, when my experiments were made with terrestrial objects ; and they induced the Aden Expedition to reject De la Rue's formulæ, and to adopt my own."

Distant "Lens" Enchantment, etc.—Artist (Photographic): "Oh yes, Mum, we can take anything—we can take the sun, which is millions of miles off." Old Lady (struck with an idea): "Oh, you can. Then, if you would besorgood aster take half-a-dozen of *my* son in Austeraylia, which it's only thousands of miles off, I should take it as a favour."—*Judy*.

Restoring Injured Glass.—M. Vinois recently called attention to a mode of restoring deteriorated glass in studios. Glass constantly exposed to the action of the sun and rain is soon deteriorated, as the potash or soda it contains combines with the carbonic acid of the air. A whitish opaqueness is the consequence of this action, and in order to make the pane return to its pristine transparency it should first be rubbed with dilute hydrochloric acid, and then cleaned with moistened whiting. By this means glass in an extreme state of decomposition may be completely restored.

Acetic Acid in Toning.—Mr. H. T. Anthony says, in *Humphrey's Journal*:—"For some time past it has been my habit to pass all our prints through a water acidulated with acetic acid, after their first washing and before toning, which gave me results better than heretofore had by simply washing in water. I suggested this method of treatment to Mr. Newton, who never does anything by halves, and he at once tried a stronger dose of the acid (30 drops of acetic, No. 8, to a quart of water), and placed the prints therein from the pressure-frames, allowing them to remain some two or three hours, until he was ready to tone, and then passing through one wash of pure water merely to remove the excess of acid water. I have tested, to my entire satisfaction, his modification of my suggestion, and strongly recommend it, as requiring less gold, less over-printing, and less time in the toning bath."

To Correspondents.

Argent.—The chief objection to the use of albuminized paper for transferring collodion prints is the presence of a chloride, which, coming into contact with the silver image, might eventually prove a source of bleaching. If the albuminized paper be prepared without salt, there is no objection. If a paper containing salt at all be used, the sample you enclose would do very well, or the tinted paper would serve. 2. The tinted paper enclosed, if treated with gelatine, would do well.

A. B.—We do not know what you mean by "the transfer paper for ivory pictures." Explain more fully, and we can doubtless give you the required information.

H. V. Lemenager.—There will be no serious difficulty in removing the varnish from your negative. The plan to which you refer, in which the vapour of alcohol is used, although doubtless efficient, is not necessary, as alcohol poured on the film will answer the same purpose. Before taking any steps, however, are you quite certain it is desirable to remove the varnish? The print you enclose appears to us to be very excellent, soft, and full of detail, but without any lack of brilliancy. It is probable that if the negative were more intense, you would lose much of the perfect harmony which characterises the print sent. The loss of brilliancy of which you speak, as a consequence of revarnishing, is due, doubtless, to the image being partially permeated by the resin of the varnish, which gives some degree of transparency to the dense portions of the negative. You may remove this in some degree, if you are anxious to have a little more brilliancy, by partially removing the varnish. This may be done by pouring alcohol over the film, allowing it to remain for a minute or two to soften the varnish, and then draining it off, and drying by the fire, same as in varnishing. To remove the varnish entirely, soaking or washing repeatedly with warm alcohol is best.

J. B. C. F.—It will be better to adhere to the method described by Mr. Bardwell. 2. So much depends on the character of the light and the nature of the subject that it is quite impossible to state the proper time of exposure of any kind of plate. Plates by Mr. Gordon's gum process should receive from two to three times as long as wet plates ; and coffee plates from three to four times as long as wet plates. 3. Plates by either of these processes will be much more sensitive than plates by Dr. Hill Norris's ordinary gelatine process. 4. The organic iron developer answers well for gum plates, but not for dry plates generally.

Subscriber from the First.—Your plan and proportions generally are good. You will find generally that the piece of triangular front top-light will generally require to be covered with a thick blind; but it may be useful in dull weather. 2. Solomon's enlarging apparatus with magnesium light answers well.

An Englishman.—"Email" is simply the French word for "enamel." 2. The term halation, as used, was intended to describe the reflection of light from the back of the plate, which is sometimes called blurring. It is a photographic term, the meaning of which is not quite accurately defined, and is sometimes used in different senses. 3. The object of treating albuminized plates with protosulphate of iron is to coagulate the albumen. 4. The object of the alcohol and acetic acid is to loosen the film from the glass, so as to render its removal more easy. 5. We condemn a preliminary coating of albumen in collodio-chloride printing because we have repeatedly known it to prove a source of fading. How far it may act in the same way with developed pictures we cannot say. 6. No. 1 is under-exposed and a little under-developed ; No. 2 is over-exposed and over-developed ; No. 3 is a little over-developed ; No. 4 is over-exposed and over-developed. It is difficult to say whether the exposures are relatively long without being familiar with all circumstances. You appear to have been working in a very bad light. The iron developer is much too weak. Although the appearance of the prints indicates over-exposure, we should give still longer exposure if, with a suitable developer, the image came out very slowly. The development of collodion prints should be effected much more rapidly than that of negatives, and should not be pushed nearly so far.

P. E.—Dry colours are sent out by the manufacturers ready prepared, so that they will adhere to glass positives. In some cases merely fine grinding is sufficient ; in some cases a little starch, or a little gum, or a little resin is added in grinding, each maker using his own method. In all cases they are sent out ready for application, and merely require applying properly with a camel-hair pencil to make them adhere properly.

W. J. A. G.—The arrangement you propose for producing transparencies seems a good one ; but the test of experiment will decide it. An Argand oil lamp will not give a very actinic light, and therefore the exposure will necessarily be long. Of the lenses you name, either No. 1 or No. 3 will answer best ; probably No. 3, as having the shortest focus. Remember, however, that if you can use daylight you will have fewer difficulties and better results. 2. Your reasoning on the second question is quite just, and leads to correct conclusions. We know that your conclusions are correct, but they are within the facts.

Rolloy Fils.—The term "golden syrup" is used in England to indicate a fine quality of molasses (*melasse*). There are two kinds of molasses, one of which has a greenish or olive brown tint, the other a golden brown ; the latter is known as golden syrup, and it is this, mixed with an equal bulk of water, which is used in preserving the film moist after development. We are obliged by all your kind and appreciative remarks, and also by your suggestion as to the use of terminology and formulæ which may be understood by our foreign readers.

M. R. F.—You will find that a short immersion in the nitrate bath is conducive to brilliancy and freedom from abnormal deposit. Rapid development is also important in securing transparent positives which are to be viewed by reflected light. Over-development should especially be avoided, as the detail is buried by over-development. The question of toning depends somewhat upon taste ; but black tones are most easily obtained in collodion prints. The formula for gold toning used by Mr. Burgess with Eburneum prints will of course answer for transparencies.

⁂ Owing to necessity of going to press a day earlier than usual this week, many letters are compelled to await answers in our next.

Several Reviews are compelled to stand over until our next.

Several Correspondents in our next.

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MR. JOHNSON'S IMPROVED CARBON PROCESS.

The highest excellence desirable in carbon printing was attained in Mr. Swan's process; the one thing it left to be desired, especially for those who wished to practise it on a small or moderate scale, was increased simplicity in manipulation; and this has been secured in the method recently patented by Mr. J. R. Johnson, well known to photographers as the inventor of the pantascopic camera, and as one of the two directors of the Autotype Company. Mr. Johnson's patent includes many points of improvement, all tending, however, to one end; his great aim has been to reduce the appliances necessary for practising carbon printing, and to make the operations easy, simple, and certain. To bring some of the most important of these improvements before our readers we will describe the operations we witnessed at a preliminary demonstration given by Mr. Johnson to the members of the Amateur Field Club, in anticipation of the public illustration of the working of the process to be given before the Photographic Society in May.

The first feature of the improved process brought under attention was the compactness and simplicity of the appliances necessary. A box about 14 inches in length and breadth, and 12 inches in depth, contained all the apparatus and material for working 9 by 7 pictures. When unpacked it was found to contain two grooved troughs of japanned tin, two flat dishes of similar material, a plate-rack, a few plates of opal glass and some of tin or zinc, a bottle of bichromate solution, a bottle of white cement, a thermometer, and a japanned case containing sheets of sensitive tissue which had been duly exposed, and ready for mounting, developing, &c. No large and powerful press was there to be used in mounting, because it was not needed; no extensive series of troughs or dishes to permit many prints to remain developing without danger of abrading or injuring each other, for a dozen prints could be developed in a plate-box holding a dozen plates.

Mr. Johnson's patent includes, we understand, a modified method of preparing carbon tissue; but in the operations we are about to describe, Mr. Swan's patent carbon tissue, permitting exposure on one side and development on the other, is employed. It is rendered sensitive by floating on a five per cent. solution of bichromate of potash; by an ingenious and easy mode of manipulating, to which we shall again refer, the floating operation is rendered very easy, and, by floating instead of immersing, the rapid drying of the tissue is secured, and the risk of spontaneous insolubility removed.

The first operation was to fill the grooved trough or plate-box with water at a temperature of about 100° Fah.; a spirit lamp, placed underneath in a cell provided for it, maintains this temperature for any number of hours required. A flat dish was also filled with cold water. A sheet of exposed tissue was immersed in the cold water for a few seconds, face downwards. Its behaviour in the water indicates the moment when it must be removed; it first curls inward, and then again becomes flat; if left a little longer it begins to curl in the opposite direction. It is before it does this, and just when it has become flat after its first curling, that it is to be removed from the water. In the meantime a plate of metal or glass—opal glass, for convenience in examining the result, is used—has been rubbed with a thin coating of solution of wax, or, what has been found much better, with a solution of stearine in methylated spirit. On this prepared surface the tissue just lifted from the water is placed, face down. To make sure that no air-bubbles are imprisoned between the face of the glass and the tissue, it is well to immerse the glass in the water, and bring the two surfaces into contact under water. A flat camel's-hair brush is dipped in the water and passed over the back of the tissue, to press it down gently and secure contact in every part. This plate is then set aside, and another and another treated in the same manner. The tissue, as we have seen, remained in the cold water something less than a minute, insufficient time to permit the gelatine to get thoroughly soaked; in a few minutes after mounting, however, it absorbs all the superfluous water surrounding it from the paper and between the glass plate and the gelatine surface, and it is found to adhere firmly to the glass without the aid of india-rubber solution or cement of any other kind.

We are here describing simply the operations of the demonstration to which we have referred; but it may be important to remark that the moistened tissue will adhere to any plane surface, impervious to water, to which it may be applied, with the same facility as to the glass plate; to prepared canvas, for instance, for oil paintings; to wood, metal, stone, &c.; and for a variety of purposes. If the glass be left without the coating of stearine or wax, the image will remain attached, and form a charming transparency or opalotype. It will, indeed, be readily seen that the use of a fatty coating of any kind is to prevent perfect adhesion, and permit future transfer, and not to facilitate adhesion.

Here, it will be noted, are several important points gained: the expense of india-rubber solution, and the trouble of applying it to the two surfaces, together with the unpleasant and deleterious vapour, are avoided. The operations are more easily performed, more quickly performed, and no press is required. We here point out, also, another facility which is gained, which will be highly valued by many. It will be noted that the side of the tissue now in contact with the glass will, after final transfer, form the surface of the picture. If, then, this glass be polished, the tissue compound or gelatine acquires a surface equally polished, and the picture a surface of precisely the same quality. If, on the other hand, the glass surface have a grain or texture, the finished picture will have a similar texture. Availing himself of this point in practice, Mr. Johnson uses glass plates polished at one side and ground on the other, and so secures a print with a glazed or matt surface at will.

To resume the operations. The tissue, having been mounted on the glass as we have described, adheres to it much in the same way in which a boy's toy, a "cleaver" or "sucker," adheres to a stone. In a few minutes it is ready for development. The plate is then slipped in a groove in the japanned trough of warm water; another and another follows until the twelve grooves are filled up. By the time this is effected, or before the first is lifted out, and the paper backing of the tissue lifted off, which is done with the most perfect ease, leaving the tissue compound firmly attached to the glass, which is then replaced in its groove, to complete development. By the time the whole of a dozen plates have been treated in this way, the development of those first treated is completed, and these, being removed, are rinsed in cold water and placed in the outer box, which is provided with grooves for the purpose, to dry. By the time the last has received this treatment the first is sufficiently dry for the next operation of transfer to the paper on which it is to remain. To effect this transfer the plate is again immersed in a dish of cold water, and a piece of gelatinized paper is placed in the water above it, and there brought into contact with the image on the glass. The two are lifted out together, the paper being then brushed down as in the first mounting, to secure perfect contact, and the plate is again set aside for the whole to dry, and in less than an hour the corner of the paper is raised and the whole lifted away, the image leaving the glass without difficulty, presenting a perfectly completed picture.

Instead of employing gelatine paper—which, to becomes insoluble, must be treated subsequently with alum—the plate may be immersed in a weak solution of gelatine to which a minute quantity of chrome alum has been added, as suggested by Mr. Swan for the final transfer of his prints; or a resinous cement may be substituted for the gelatine, as in the single transfer process to be described.

In the operations we have described, a dozen pictures may be mounted for development, developed, washed, and mounted again for final transfer within an hour, and the work may be done without difficulty on a small table in an ordinary sitting room with the blinds pulled down.

So much for the simplified process of double transfer, in which a properly non-reversed picture can be produced with ordinary negatives. Now for a similarly simplified process of single transfer, in which the images are reversed, unless reversed or transferred negatives are employed, a process, therefore, obviously inapplicable for use with the mass of negatives in existence. The process is, however, singularly simple and efficient where negatives taken for the purpose are employed, or where reversal of the image is of no consequence.

The tissue is, of course, sensitized and exposed as before. A piece of fine paper is then immersed in a solution of white shellac in liquid ammonia. This is the cement employed. This paper is then placed upon a plate of glass, or a sheet of tin, or similar surface, and pressed down with the flat camel's-hair brush. When this is partially dry the sheet of exposed tissue, which should be about a quarter of an inch every way less than the mounting paper, is immersed in water to which a little ammonia has been added, and then placed on the mounting paper which rests in the plate. It is brushed down, dried a little, and then developed as above described. It is then rinsed and dried. When dry, a penknife point is run round the edge, and the picture is lifted from the plate quite complete. Nothing can be simpler, nothing more efficient.

The patent, as we have said, comprehends several other modifications and special applications, but we have described the simplified methods of ordinary carbon printing. The especial result of this simplification will be, we apprehend, the much more general employment of carbon printing in small establishments The gigantic step effected by Mr. Swan's invention secured the highest excellence, and rendered carbon printing possible on a commercial scale. Mr. Johnson's invention, without sacrificing any point of excellence or fitness for the most extended operations, carries Mr. Swan's improvement so much further that it is equally available for the smallest operations of the portraitist, or even of the amateur. It is, in fact, simpler, easier, and infinitely more rapid in production, than any silver printing process we know; whilst it is equal or superior in excellence, and admits no reasonable doubt of the absolute permanency of its results.

MANIPULATING, DEVELOPING, AND TONING PHOTO-CRAYONS.

The interest in the new style of photo-crayon portraiture has brought us many inquiries as to the development and toning of collodion prints generally, both in regard to material and method. We subjoin, therefore, a few further hints, which may be of service to those who have had little experience in this mode of working.

A common question amongst the enquiries which have reached us is: "What exposure is necessary?" Although the enquiry is so common, it is one which really should not be made, because it is impossible to answer it. Everything depends on circumstances, such as the density of the negative, the quality of the light, the amount of enlargement, the angular aperture of the lens, and the kind of developer. It may reasonably vary between ten seconds and twice as many minutes. With a good light and full aperture of an ordinary portrait lens we have produced transparencies the same size as the original in less than ten seconds. In producing an enlargement in a dull light we have given more than ten minutes. As in working the negative process, experience and observation of the appearance of the image on the ground glass are the best guides. One golden rule should be remembered: full exposures give the best results; it is better to get all the detail by the complete action of light, than to force it out by development.

Experience alone is a guide of value in development. Over-development should carefully be avoided, as it tends to bury detail and render the image heavy. Experience in the kind of treatment in developing required by the old collodion positives is of value here. As a general rule, a full exposure and the use of a developer containing plenty of acid will give the best results. With a weak negative more acid should be used; with a strong, less acid may be used. If an iron developer be employed, the gelatino-iron solution will be found best. Pyrogallic acid, however, gives the warmest and best tones; but it should be remembered that the plate requires a much longer exposure than with iron; Mr. Burgess, in producing his Eburneum pictures, finds that with a pyrogallic developer the exposure should be ten times as long as with an iron solution.

Several correspondents have asked for a mode of producing a warmer tone than is produced by bichloride of mercury and hyposulphite of soda. As experience will soon teach, the character of the image, as depending on collodion, development, &c., will affect the colour quite as much as the mode of toning employed. In our experience the use of acetic acid in the developer in place of citric acid gives a much warmer picture for examination by reflected light, as it is well known to do in transparencies for use with transmitted light. Quick development gives a warm tone, slow development a black tone. Amongst toning agents, the sulphides—solution of sulphide of potassium or ammonium, for instance—give brown tones, not always, however, of the most pleasing tint. Bichloride of mercury followed by a weak solution of a sulphide gives a good brown black. Bichloride of mercury followed by a dilute solution of ammonia gives, under favourable circumstances, the richest and warmest black we know.

On the subject of the manipulations generally, some valuable hints may be gained from the following *resume* of operations prepared by one of Mr. Sarony's operators:—

"Put the negative to be enlarged in the place of the ground glass of the camera, then place it close to an opening in the window of a darkened room, taking care to exclude all light except what passes through the negative. In front of the lens place a board on a stand that can be moved backwards or forwards with pins, or a slip of board placed within the circle of light to rest the plate and the focussing-screen on (the latter is made of a sheet of white paper pasted on a plate of glass of the size to be used). Rest the screen on the pins or slip of wood, paper side next the lens, and fasten at the top, if necessary, with a large drawing-pin. Get the proper size by placing the lens nearer to or farther from the negative (according as the image is wanted larger or smaller), and then moving the board and focussing-screen until it is nearly in focus, finishing the operations with the rack-and-pinion. Now cap the lens—or, better still, put a yellow glass in front of it—remove the focussing-screen, and substitute the sensitive plate.

"It is now ready for exposure; but before you remove the yellow glass from before the lens, have ready the vignetting mask, which consists of a piece of strong blackened cardboard, *larger than the sensitive plate*, with a hole in the middle about 2 inches long by 17 inches wide, not quite an oval, but inclining to a pear shape; hold it with one hand between the lens and sensitive plate, so as to exclude the light from all parts of the image except the head and shoulders; remove the yellow glass, and move the vignetting-board backwards and forwards between the lens and plate, sometimes giving it a circular motion, in order to graduate the backgrounds and a portion of the dress.

"The exposure can only be learned by practice, as it varies considerably with the quality of the negative. If rightly exposed, the image should begin to appear in about thirty seconds after applying the developer, and be completed in a minute and a half or two minutes. It is imperative that the operator should have a good light to develop by above the plate, as it is of the utmost importance that the developing should be stopped at the right moment; and the operator should bear in mind that the developing action continues after the washing of the plate, and, consequently, should begin to wash a little before the detail is perfectly out. The fixing bath is weaker than that used for negatives, and is most conveniently used in a small jug. Begin to fix by pouring a stream of hypo on the darkest shadows, and then continue until all the iodide is removed from the plate. Wash and dry *before trying another*. When dry, test it by laying it flat on a piece of tinted paper. If it has been properly exposed and developed, the appearance of the head will be brilliant, with plenty of delicate half-tone, and no heavy shadows. Beyond the vignetted portion the plate should present the appearance of clear glass.

"The varnish should be hard, and light in colour. The best negatives for this process are those that are thin, and yet have plenty of detail, and no dense lights.

"Mr. Sarony makes nearly all his photo-crayons by the aid of Solomon's magnesium light, and is thus independent of the weather."

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ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

M. Albert's Process and Photo Collography—Mr. Johnson's Improved Carbon Process—Wholesale Piracy and its No Profits—Portraits "Aux Deux Crayons"—Sarony's New Portraits—Ownership of Negatives—Mr. Blair's Pamphlet—Societies.

I have heard some disappointment expressed at the fact, recently announced in these pages, that M. Albert's photo-mechanical printing did not, after all, involve any new principle, but was simply a modification of the process known as Tessie du Motay's. I think, however, that the conclusion it suggests is in many respects a most satisfactory one: it serves to prove that the process in question is capable of producing prints of the rare beauty which characterizes those issued by M. Albert, and also to suggest—that is, assuming the statements in reference to the number of impressions which can be produced to be true—that the drawback of rapid failure in the printing surface, hitherto supposed to belong to M. Tessie du Motay's process, is not a necessary and inevitable condition.

Is it not strange that a process apparently so simple should have received so little attention in this country? It appears to be tolerably accurately described in M. Poitevin's specification of 1855; and, under the name of photo-papyrography, it appears to have been used at the Ordnance Survey Office at Southampton for years, to produce a small number of impressions of subjects which were not worth the trouble of putting down on to stone or zinc. But until MM. Tessie du Motay and Marechal took it in hand, the wonderful capacity of a chromo-gelatine film to render half-tone does not seem to have been recognized. Reports from the Continent seem to suggest a general awakening to the advantages of the process, and it is probable that it will be largely utilized ere long. I think the name you apply to the process, in a paragraph in your last, a happily descriptive one. Photo-collography at once indicates the distinction from photo-lithography, a gelatine surface instead of stone being used.

From what I learn of Mr. Johnson's improved carbon process, it seems more likely to usurp the place of silver printing, even in the hands of an amateur, than any process hitherto introduced. A complete equipment of material and apparatus for producing 9 by 7 pictures is packed up in a box little more than a foot in length, breadth, and depth, and the whole operation could be conducted in a ladies' boudoir without disarranging it. No offensive smell of benzole arises, because no india-rubber is used. No press is required for mounting. A small spirit-lamp maintains all the heat required in the water for developing; and a dozen 9 by 7 pictures can be mounted, developed, and transferred in an hour by one person. The operation of sensitizing the tissue requires just the same trouble as exciting albuminized paper. The exposure is only a fourth or fifth of that of silver prints. It will be seen, therefore, that the advantage in facility is all on the side of carbon printing, which would be worth attention if only because the long trouble and operation of washing the prints is altogether got rid of. The process seems so simple that it is likely by its certainty of adoption to set aside all contest about other patents.

Reference to litigation reminds me of the important detection which Mr. Graves has made, during the month, of a piratical producer. In many cases some small degree of public sympathy has gone with the vendor of illegal copies, on the bare possibility that he scarcely knew the difference between copyright and non-copyright scraps, or, in some cases, on the alleged ground of his having been entrapped into supplying piracies by the machinations of a hired spy; but in the case of the producer of pirated copies of well-known copyright pictures no plea of ignorance can be urged. He knows he is carrying on an illegal trade; if he have any moral sense at all, he knows he is robbing the owner of the copyright, and is bringing photography, the art by which he is trying to live, into disrepute and disgrace. The appeal *a l miserecordiam* of an old man of sixty is sad. He has been scarcely able, by working in defiance of the law, and daily infringing the rights of another, to get bread and cheese for his family, and he feels that if the law takes its course its full penalty will be "death to him." From an allusion of one witness it would appear that the work was done well; but it is clear that, as in the case of stolen or smuggled goods, it must be sold at rates so low to compensate for the risks and precautions, that it ceases to be remunerative. How oft it has been pointed out that the skilled thief often works harder, and exercises more ingenuity to live a life of danger, and often of penury, than would serve, if used in honesty, to secure comfort and respectability! I do not like to moralize, but it is impossible to avoid the reflection that the way of transgressors *is* hard.

I have seen some of the American portraits on tinted paper with white lights, which they style "Aux Deux Crayons." They are very effective indeed; but white lights in body colour on albuminized paper have a slightly vulgar effect, and the result might, I think, be better managed. Still, I think, the effort now and then to introduce novelties in portraiture, instead of eternally keeping in a groove, is wise, and, doubtless, profitable.

Speaking of getting out of the groove reminds me of Mr. Sarony's novelty, which appears to have received the customary greeting. The burlesque confession of faith attributed to a Yankee seems to summarize the views of some people in regard to every form of improvement which comes under their notice: "It's not new, and it's not true, and it don't signify." It is a mistake, however, to suppose, in relation to such matters, that a few objectors, who give utterance to their doubts or dissatisfaction, by any means represent public opinion. Discontent is generally loud and demonstrative, whilst content is silent and unobtrusive. Hence, for one who publicly objects to a novelty or the claims of its inventor, there may be scores or hundreds who silently approve of the invention, and are grateful to the inventor. In one respect Mr. Sarony's novelty has been fortunate: as a result it has received universal admiration, the only objection being to the patent claims, which, however, are made to sit so lightly, that few can possibly object to the yoke. I cordially hope and sincerely believe that the new style will elevate the public appreciation of photography, and put money in the pockets of photographers.

The question as to the ownership of negatives, which arises now and then, fails, so far as the ordinary practice of portraiture is concerned, to come to a legal decision. The French and German cases recently decided do not touch the case of portrait negatives, even if the decisions were of any effect in this country. The case to which Mr. Plumtree recently refers in your columns seems well calculated to raise the question, if the claim made be persevered in. I presume we shall hear more of the matter if it be so, for it is scarcely to be supposed that the photographer will yield to such an unreasonable and unceremonious demand. As a new Fine Arts Copyright Bill is to engage the attention of Parliament this session, possibly the modified act will remove some of the doubts which pertain to the act now in force.

I shall feel considerable interest in the progress of Mr. Blair's scheme for publishing a new carbon process by subscription. Few men deserve better of the photographic public than Mr. Blair. He has worked so long, so steadily, so efficiently, and so modestly in the field of carbon printing, often by the publication of some new facts or hints reviving public interest in the subject, when it was well-nigh forgotten, that photographers ought to feel interest in the success of any project he might propose. Here is a very important one, concerning public interest much more than Mr. Blair's interest. He wishes to make public a new method of getting very good carbon prints by very simple means, and without any transferring operations. Whilst wishing the public to possess the process, he rightly wishes to be re-imbursed for the cost of providing it for them, and offers, therefore, to issue it in a half-crown pamphlet, if sufficient subscribers forward their names to justify him in proceeding to the publication of the work. I heartily wish him success, but must confess that I fear very much that he will not be successful. There is, in the first place, an unpleasant memory of something of a similar kind in connection with carbon printing some ten years ago, which issued in general dissatisfaction; and, in the second place, there is the strange *vis inertia* to overcome which so governs mankind in relation to things they are not immediately interested in. I am almost afraid to confess, but there is, I fear, also a larger amount of indifference to carbon printing than one would like to believe, and I have absolutely heard on more than one occasion a covert wish expressed that silver printing operations, which had been carried on to such perfection, and in which everyone was so well versed, might not be disturbed yet awhile. Nevertheless, I do heartily hope that a sufficient number of progressive photographers may be found to subscribe for the promised book; and although it should be very distinctly understood that in subscribing to the book they are merely entering into an arrangement for which they will receive a *quid pro quo*, and are not in any sense giving anything but their interest in the matter, yet I may add, in relation to that, the hint contained in the old classic proverb,—*Bis dat qui cito dat.*

The societies have been active. At the Parent Society an interesting demonstration of Mr. Woodbury's photo-relief printing process was followed by an amusing discussion, in which many excellent suggestions were made as to the means whereby Mr. Woodbury might produce the kind of printing plates which would *not* answer his purpose. This was followed by an interesting discussion on Mr. Sarony's photo-crayons, some examples of which were shown.

At the North London, the report of the committee was read, officers chosen, and other annual business attended to. A good paper was also read by Mr. Dunmore, and some capital examples of plain paper printing shown by Mr. Belton.

At the South London Society, Mr. Sarony's new portraits formed a topic of animated discussion, and this subject was followed by another from the Question-Box, opened by Mr. Taylor, in which the relative value of the wet and dry processes was considered.

At the Liverpool Amateur Society an admirable address was delivered by the president, Mr. Green, after which many objects of interest were exhibited and discussed, the proceedings terminating with the reading and discussion of an excellent paper on Cleaning Plates, with especial reference to their use for dry-plate photography.

The popular meeting of the Edinburgh Society, held during the month, appears to have been a great success; five or six hundred persons being present to witness Mr. Highley's lantern exhibition of slides prepared for the Russian Government, to aid in educational purposes, and listen to an interesting lecture by Dr. Robson on the subject.

I learn that a new photographic society has just been formed at Clifton, for which I wish every success.

DEVELOPING AND TONING COLLODION PRINTS.

BY J. M. BURGESS.

[Mr. Burgess, in general reply to many letters asking for hints and advice in the production of the enlarged collodion prints used in the photo-crayon portraits, has favoured us with the following remarks for publication.]

I have been asked, by various correspondents, to give a few hints as to the production of these positives, but have very little to add to what has been already published. No better formula for a developer can, in my experience, be used than the pyrogallic acid solution I have frequently given. It stands as follows:—

Pyrogallic acid	3 grains
Citric acid	3 ,,
Acetic acid...	12 to 20 minims
Water	1 ounce

The exposure is about ten times as long as that required by an iron developer, and all the detail should come out before any intensity is gained. It requires a large amount of practice to stop it just at the right moment. As a rule, if the exposure is found to be long, and the picture comes out rather quick, you may let it grow dark, as it will lighten in the fixing and toning; but if the picture comes out very slowly, stop it as soon as it has become as dark as you wish it when finished. What is lost in the fixing will be gained in the toning. I always employ gold for toning, for though I have tried everything else, I could find nothing which has ever given me such a fine black tone. I use the strong solution, which has before been described, namely, 1 grain of double chloride of gold and sodium in a drachm of water. Its action is very rapid, the toning being effected by pouring the solution on the plate like a developer. When properly managed, the tone is a rich neutral black.

PHOTOGRAPHY IN GERMANY.

BY DR. VOGEL.

Having been ill for about eight weeks, I can give you only little of my own experiences in this communication; but I may mention some interesting details from the experiments of others.

M. Grasshoff, the well-known artist-photographer, has recently tried the new patent lens for portraits from Dallmeyer, and with very remarkable success. Many practical men in Germany have tried this lens before, but, very curiously, the result was, in all cases, that the new lens, without unscrewing, works very admirably, gives a flat picture without distortion, while the effect of unscrewing was not satisfactory. M. Grasshoff explained in the Photographic Society that the bad success of the experiments was the result of the incorrect *modus operandi*. The old experimenters had focussed and afterwards unscrewed, but that is an important error, for it is necessary to focus after unscrewing. The effect, properly managed, is very good indeed for diffusion of focus. M. Grasshoff showed a very nice picture, 7 by 9, made with the new lens 2¼ inches diameter, which was much admired. I have repeated his trials, and confirm his results. The work of the lens was excellent. The first effect of unscrewing was an abridgment of the focus; the sharpness was not quite so great as without unscrewing, but the depth of focus was much better than before.

I think you have often observed the white line which appears in photographs on the margin of black cloth and similar objects, if they are situated before a bright background. Recently, MM. Fisk, Hoffmann, and Schranck in Vienna, proved by experiments that the reason of this phenomena is the uneven development. If a large white object (*i.e.*, a hand) is surrounded by dark objects (*i.e.*, clothes), the dark objects only make a feeble impression on the plate, and, for this reason, the precipitated silver from the developer will be very weakly attracted by the dark parts; therefore the white hand, situated in the dark parts, will have a large quantity of silver in the developer over it, and will attract this and become much more intense than it would be if situated in a brighter background. In the same manner, the margin of a white object limited by a dark one will be more intense in the negative than the inner parts of the white. Now it is important to note that the direction of the pouring of the developer influences the result. It you pour the developer in such manner that it go from the dark object on to the white, the white margin will be much more intense than if the developer flows in the opposite direction.

A very curious phenomena of the same nature I observed some time ago. If you focus the camera on a white sheet of paper, and expose on it a collodion plate in the manner that you remove the dark shutter successively, after one, two, three seconds, you obtain a plate in which the different parts are exposed one, two, or three, &c., seconds; and if you develop the plates, you obtain a series of strips of different intensity; but in each strip the margin which is situated against the side which is less exposed will be much darker than the other.

Enclosed I send to you four copies of the photographs of the Aden eclipse. You published last year the formulas of celestial photography from Mr. Warren de la Rue, and perhaps you have observed that the formulas of the North German expedition were a little different from the first. The reason is, that we have tried different formulas before our travel to Aden, in the Berlin Royal Observatory, by taking the moon. After the experiments with ordinary terrestrial objects, a bromo-iodized collodion gives the best results; but Mr. Warren de la Rue recommends a merely iodized collodion for celestial objects.

The results of our experiments were, that the iodized collodion gave a very intense but very hard picture of the moon, which wanted details in the shadows; but the bromo-iodized collodion gave a weaker picture, but soft, and with much more details in the shadows. For this reason we have used a bromo-iodized collodion for taking the prominences.

The Aden pictures prove that the prominences were altered during the totality; some slight spots disappeared after the exposure of the first picture, some others appeared. A part of the sun was covered with clouds during the totality; for this reason our photographs do not show the whole margin of the sun. I am very curious to see the English photographs of Guntoor. I think the comparison of them with the Aden pictures will give very important results.

Many experimentalists work now in the same direction as M. Albert, and recently I have seen some prints in a like manner from M. Schwab, Hanover, which show remarkable half-tones, and which were printed, like Albert's, from glass plates. Perhaps, in a short time, the secret will be published. The carbon printing process has received here a new impulse from some experiments by M. Grasshoff. M. Grasshoff showed some excellent carbon prints in the Berlin Photographic Society, which were worked out after the simple process published by myself a year ago, and repeated by some other experimentalists. The carbon paper is exposed under the negative, washed in ordinary water, pressed on coagulated albumen paper, dried, and developed afterwards in hot water. The developed picture is ready without a new transfer; it is inverse in relation to right to left.

At the last meeting of the Photographic Society there were exhibited some very nice specimens of collodion paper prints, from M. Ost, Vienna, transferred on opal glass, enamels, &c., &c. The process of Ost consists in the employment of your collodio-chloride of silver, and the most important application is for the reproduction of negatives. You make a positive collodion print in the printing-frame, transfer it on glass, and make in the same manner from the picture a new negative. This process is of great value for multiplying precious negatives, and if the original negative be first touched up, it is possible to obtain a negative copy which is better than the original one.

MANIPULATIONS IN PHOTO-CHEMISTRY.

BY JAMES MARTIN.

Photography being in reality a branch of chemical science applied to the fine arts, it must be assuredly necessary that every beginner should have a proper initiation in the everyday manipulations he is called upon to perform, to be aware of the many simple contrivances which may be used in place of more costly articles, and the readiest way of producing those effects and changes he may desire. I have never yet noticed any popular information on these subjects in any of those books professing to teach the rudiments of the art, but that, on the contrary, they seem to pre-suppose that the learner has some previous knowledge of such matters, or that they are so easy of performance as to require no tuition. Knowing the contrary to be the fact in most cases, and that some of these processes are really difficult to beginners; also, believing that the tyro having a knowledge of manipulating in a business-like manner, and having educated his hands, will have more opportunity of concentrating his attention upon those matters which require his head, thereby rendering his onward path smoother, and his progress quicker and more certain, I therefore, Mr. Editor, with your kind permission, offer a short series of papers upon photographic chemical manipulations, feeling assured that if they are of no other service, they will at least inculcate that most requisite of all requirements, method. I do not intend to write a treatise on chemistry, or to dogmatize to old practitioners, but nevertheless hope that all your readers may find something novel or useful in the facts and remarks I may offer. It is easy to go wrong, even in familiar actions; let a man attempt to mount a horse standing on the left hand side, putting his right foot in the stirrup; he may mount him, certainly, but he will find he has done so with his face to the tail.

The term manipulation, working by hand, or manual operation, signifies, in chemical science, the operation of preparing substances for experiment, in pharmacy the preparation of drugs, the manual and mechanical operations of the laboratory, and, amongst others, those of weighing, measuring, filtering, distilling, precipitating, dissolving, and the use of the blowpipe. There is not one of the processes here mentioned that the photographer is not called upon to perform, or ought to be able to do, should occasion require; and I am sure that they would be done much more satisfactorily, with less expenditure of time, and more economically, if he was sure of the proper way to set about it.

As a matter of course, all businesses require a place to work in, either office, workshop, or laboratory, according as the calling may be; there must be some place fitted up with proper conveniences for the purpose of performing the different operations required. A photographer in a small way requires little of the expensive fixtures of a general laboratory—indeed, I may say, none at all, if I except a convenient table and a few shelves, these being almost the whole of his fixtures. Of course the deeper he dips into the chemistry of his art, the more convenience he will need; but although the requirements of his laboratory may be few, its situation should be a matter of consideration, both for the sake of health and the production of good work. This has been too little attended to, and in many cases grossly neglected, more, I believe, from a want of knowledge than any other cause. How often have I seen the dark room crowded with a confused medley of various chemicals and messes, some in cracked bottles, or with damaged corks or ill-fitting stoppers, or, worse still, volatile liquids under the above circumstances left standing on the mantel-shelves of warm sitting rooms, and at times even in the bedroom itself! And yet these careless persons wonder why they get fogged pictures, and ill-health.

Nearly all the liquids and some of the solids used in photography are volatile or fuming, giving off vapours more or less pungent, containing the essential properties of the chemical substance, whatever it may be. I need hardly name, as examples, ammonia, acetic acid, and ether. Now all these chemicals are active poisons, varying only in degree, and, if mixed, in many cases form much more deadly and dangerous compounds then when separate, and act most mischievously upon the work in the studio. How foolish, then must be the habit of strewing them all over the premises! How dangerous to life and property, for many are highly explosive! How necessary to have a place kept on purpose to store them, and how requisite that this place should be situate in the least dangerous situation, under the photographer's sole control, and under lock and key! As the location of a laboratory must be governed by circumstances, I cannot give any decided rule upon this point, but I should think that in many cases a garret would be very suitable and easily fitted for many photographic operations, and in large towns frequently has the best light. If it should have a good cupboard, this, with a large table covered with an oil cloth, and a few shelves fitted to the wall, will form a most convenient place for the purpose intended. Within this place keep all the stock of chemicals, never allowing anyone except those conversant with the profession to enter, and never allowing anyone or doing so himself at night, without having his light confined in a lantern. Stoppers are apt to blow out of bottles, and the more explosive the vapour, the more likely is this to happen; therefore care should be taken to guard against such accidents. The room should also be well ventilated, especially if there should be no fireplace; a pane of glass may be taken out of the window, and replaced by strips of glass so placed one over the other as to allow the air to pass freely between them.

The situation of the laboratory having been chosen, and the necessary fittings conveniently arranged, the next requisites will be a set of wide and narrow-mouthed bottles, to contain the stock of chemicals kept on hand. This, either for amateurs or professionals who reside in large towns, need only be small, but for those living in country places must be much larger. I shall refer to this part of my subject again. As regards the bottles, they need not be of an expensive description; in many cases those received from the wholesale dealer will serve as well as any, and wide or narrow-mouthed bottles can often be obtained from the druggist or confectioner, as empties, very cheaply; those of a green colour are to be preferred to white ones, as this colour, being very non-actinic, prevents the daylight acting upon their contents. It has been the fashion to make bottles without lips; these should always be rejected, as, however small they may be, the contents cannot be dropped from them, and, when poured from, they are very apt to make a sloppy mess. It can easily be imagined what a danger and inconvenience this is with corrosive acids or chemical solutions that will stain, such as nitrate of silver; on the contrary, the lip should be broad and come to as much of an edge as possible. Those having round lips are very nearly as inconvenient and dangerous as if they had none; appearances, in this case, at least, must not be studied, but it must be considered that handsome is that handsome does. The size and number of the bottles to be obtained will, of course, be regulated by the extent of the business and the number of articles required. Method in their arrangement is most essential; this will prevent danger and confusion and loss of time, and, perhaps, the frequent ordering of articles which may already be in stock. I should think three or four sizes quite sufficient; these placed upon shelves, in rows, the largest on the bottom shelf, and each next smaller size above the last, every one bearing a distinctly printed or written label of the contents firmly attached to its front side. If a nest of small drawers are added underneath the bottom row they will be found most useful, and should also be labelled. All chemical mixtures, either experimental or otherwise, should have their proportions fully stated, and the date affixed, when compounded, on their labels, as age has a great influence on most photographic chemical mixtures; take, for instance, collodion, iron developers, &c. No certainty in experimenting can be arrived at unless this rule is invariably practised. As corks are apt to get broken, and, in many cases, are acted upon by the liquids they are exposed to the action of, it is best to use stoppered bottles whenever it is possible to do so; still, as sometimes corks must be used, a stock of various sizes should always be at hand; these should never be used for any other mixture than that they were first dipped into, otherwise it may occur that the chemical they have absorbed may change the nature of the last altogether. To avoid danger with corks that have been used, it is best to burn them. Stoppers of bottles are liable to get fixed in their necks, especially when the solutions have a tendency to crystallize; this may be avoided by smearing the stopper with a very little sweet oil, as the oils which are burnt in paraffine lamps. The quality and quantity of volatile liquids—such as ammonia, alcohol and ethers—are liable to be much reduced should either the cork be unsound or shrink, or the stopper misfit; in either case, especially should the articles require to be carried any distance or kept some time in stock, it will be necessary to cover the cork with coarse sealingwax in a melted state, and the stopper should be luted to the neck of the bottle by either some crumbs of bread or linseed meal, moistened and well kneaded, putting over all a leather or bladder cap; these alone are not always to be depended upon, and are quickly destroyed by acids. Stoppers fixed in the necks of bottles may often be removed by either slight raps given first on one side, then on the other, with the handle of a palette knife, or the neck of the bottle may be dipped in hot water, or a little sweet oil put round the neck and let remain for a while; but beware of using too much force or heat, especially with corrosive acids or volatile liquids, or the effects may be most disastrous. It is better in such cases to put the bottle into a clean jug, break it, and pour off the contents into another bottle, which should, of course, be ready prepared to receive them.

Two more essential regulations I would suggest: these are that, after abstracting the required quantities of chemicals necessary, each bottle should always be returned to its place, and that no one should be allowed to enter the laboratory at night with a candle unless it be well secured in a lantern.

THE STEREOGRAPH.

BY PROFESSOR JOHN TOWLER, M.D.[*]

THE science of the stereograph is not yet complete, as is evident from the numerous questions received from correspondents. We thought we had exhausted the subject years ago, but, in the practical details, it appears that this was not the case.

Such questions as the following, lie before us:—

1. What is the cause that two flat pictures, apparently similar, can be made to produce a solid picture, a picture in relief?
2. Why do not two engravings of the same object, in the stereoscope, produce a picture in relief?
3. What must be the width of the stereograph?
4. How far apart must the lenses be placed to take stereoscopic negatives?
5. What lens is the most appropriate for taking stereographs?
6. Why is it that the stereographs of one photographer are easily seen in relief, whilst those of another produce pain and difficulty in the attempt to superimpose them?
7. Of what use is the so-called wide-angled lens in stereography?

The above are the most important questions; but, besides these, we have others, the answers to which will be embodied in the replies to the preceding.

Answer to the first question.—Although apparently the two pictures that constitute a stereograph are in every respect similar, are of the same size, contain exactly the same amount of material, of detail, of buildings, trees, &c., yet there is a difference, and this difference is the cause that two flat pictures can be made to produce a solid picture, a picture in relief. It is not our intention here to go into the mathematics of this difference, for we have done that already, but you shall know what it is practically.

Furnished with a pair of compasses or dividers, place one leg on the object in the left stereograph, which you think was the nearest to the photographer when he took the picture, and the other leg upon the corresponding object in the right stereograph, and see how many inches and parts of an inch the distance takes in on a graduated scale.

Now extend the compasses, and take the distance between the corresponding objects which appear the most distant, and ascertain its amount on the graduated scale. This distance will be found to be greater than the preceding. The difference between these two measurements is that which is the absolute cause that produces stereoscopic effect; if there be no difference, there can be no solidity in the superimposed pictures. The difference in question results from the different position which any object occupies in reference to either eye of the observer, which is quite evident if you regard, for instance, the exact position of the mast of a ship as seen on a pane of glass, first by the right eye alone, and then by the left eye alone; these two positions do not coincide; the eyes, being placed about two inches and a half apart, see the mast from two different standpoints, under two different angles, and consequently locate it on two different places on the glass. If now, without changing your position, you direct either eye separately upon an object much nearer than the mast of a ship, you will find that the two positions in which this object is seen will lie between the two preceding positions; that is, will be nearer together.

Answer to the second question.—In all prints and engravings the distances between corresponding points on two pictures placed side by side, whether near or more remote, will be found to be always the same; hence, when such pictures are superimposed, no solid effect results. But if the print or engraving, by reason of perspective and shading, already exhibits a certain amount of relief on the single picture, the same amount will be apparent by superimposition; but this amount is far inferior to that produced by the stereograph.

Answer to the third question.—This is, indeed, a practical question, and one that has frequently been shirked. The width of the stereograph must be exactly the width between the pupils of the two eyes if the stereograph is to be perfect; that is, if the picture is to represent a landscape in the same relief as the two eyes would observe it if located in the position of the lenses. But since the distance between the eyes of different persons is not the same, it is evident that the stereograph ought to be mounted in such a manner as to admit of bringing the two pictures nearer together, or of sliding them further apart, so as to accommodate different individuals. But even this accommodation is not a perfect compensation, for the stereographs for one set of eyes are different from those of another set, and can be perfect only when made for the eyes respectively. Hence it is that stereographs of the same object ought to be mounted at various widths from the two extremes: the minimum and the maximum distances between the pupils of the two eyes of different individuals.

Answer to the fourth question.—This is a question equally as important as the former, and as little understood. The answer here is the same precisely as the preceding; the width between the centres of the two lenses must be exactly the same as that between the pupils of the two eyes, in order to produce perfect relief. But how often is this rule violated! Some photographers pride themselves in producing big stereographs; and even some opticians would persuade us that their lenses are the best for stereoscopic purposes, because they will produce pictures four or more inches in width, and sharp all over. Such pictures are good in their place, but are not required for the stereograph. Now let us settle one question right away. If the two lenses are fixed three inches apart, the pictures on the negative that contain the same amount of material will be invariably three inches in width; and if the lenses are four inches asunder, the pictures will be four inches wide, and so on. Of course the focal length of the lens must increase as the width between the centres of the lenses increases, otherwise the respective pictures would not be perfect. We know one photographer whose lenses are five inches apart. This is a great error, but he does not know it; and photographers do not relish mathematics, which settle all such knotty points. "What difference does it make," says he, "since I cut down the picture to the proper size for the stereograph, and can use the full-sized pictures for the cabinet picture?" This reply introduces a new question: "Can such pictures be cut down, and still retain the proper conditions of stereoscopicity?"

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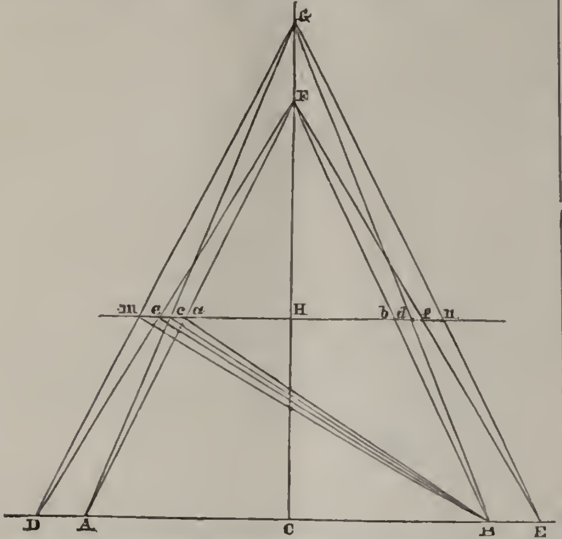
[*] *Philadelphia Photographer.*

In order to answer this question, I was obliged to put it through the geometrical mill. In the first place, I had to satisfy myself whether the same ratio existed between the front and back distances of stereographs taken with lenses at different distances apart. This was done in the following manner:—

Let A and B, in the adjoining figure, represent one set of lenses, whose distance apart is two inches and one-half; and D and E another pair, three inches assunder. Let F and G be two objects, a near one and a more distant one. The line $m\ n$ represents the negative-glass, on which F is seen at a and b respectively by the two lenses A and B; C is seen at c and d. By the two lenses D and E, F is seen at e and f, and C at m and n. Now it is important to know whether the distance $a\ b$ is to $c\ d$ as $e\ f$ is to $m\ n$. Draw the line G C bisecting A B.



From similar triangles we get the following proportions:—

NH : FC : aH : AC : : eH : DC, and
GH : GC : : cH : AC : : mH : DC;
Therefore, aH : cH : : eH : mH,

Or by doubling the terms all through—

ab : cd : : ef : mn.

The ratio in question therefore exists.

Two questions now arise:—

1. Is the relief the same in the two stereographs, the one whose pictures are two inches and a half apart, and the other three inches apart, when regarded by eyes two inches and a half apart?

2. If the three-inch pictures are cut down to two inches and a half, is the relief the same?

To answer the first question, we must again resort to geometry, which we do unwillingly, because you may regard all this as pedantry, as a desire on our part to show off our erudition. Let four lines be drawn accurately from B (in the preceding figure), to a, c, e. and m, respectively, and cutting the line H C. Now, if the relief is not disturbed by the different width of the stereographs, the space on H C, between B a and B c, will be equal to the space on H C, between B e, and B m; but the latter is always smaller, which indicates that the perspective is shortened; and a globe, by such a proceeding, would be represented as flattened from before backwards. Thus, then, to take negatives with lenses wider apart than the centres of the eyes, will produce pictures which, when superimposed, shorten the perspective; and to take them with lenses at a shorter distance apart than that between the centres of the two eyes will produce stereographs that will elongate the perspective: both these results are so much distortion.

If the large picture is cut down, so that e H is equal to a H, then the distance $c\ m$, being greater than $c\ a$, the distance comprehended on H C, between B c and B m will be greater than between B a and B c. This proceeding, therefore, elongates the perspective, and consequently produces distortion in the opposite direction.

(To be continued.)

DETECTION OF A PRODUCER OF PIRACIES.

Mr. Graves, who, in the war of extermination he has been rightly waging against pirates, has not hitherto been able, as a rule, to convict other than the venders of piracies of his engravings, has recently pounced upon a wholesale producer. The hearing of the case is not yet completed, but sufficient has been adduced to show that, although the piracy had been carried on extensively, it is, after all, as it should be, a wretched and unremunerative business. At the first hearing we are told the accused pleaded for commiseration, stating that a heavy fine would ruin him, as he had scarcely been able to earn bread and cheese for his family. We condense the report from the daily papers. The charge was heard at the Mansion House on the 18th instant.

Thomas Ritchie, sixty years of age, St. Swithin's Lane, was charged with pirating and publishing a number of valuable prints, the copyright of which is vested in Mr. Henry Graves, the eminent printseller, in Pall Mall.

Mr. George Lewis, jun., conducted the prosecution, and stated that it disclosed one of the worst cases of the kind that had probably been brought before a court of justice. The prosecutor, however, did not wish to press for the whole penalty of £10 on each subject which had been pirated, but would apply that the mitigated penalty of £5 in each case should be imposed, in the discretion of the Bench.

Mr. Boydell Graves produced the certificates of the registration as copyright of eleven prints of the original engravings, and the pirated photographs. Witness had on several occasions, and principally on Sundays, gone to the prisoner's house, in Gainsborough Road, Hornsey, and watched his garden. He there saw him engaged with thirty presses in printing from negatives of copyright pictures, including several of his father's. He was apprehended on Wednesday, and no less than thirty-seven negatives from his pictures were found, besides many others belonging to Mr. Gambart and others in the trade.

The prisoner said it was true that thirty presses had been seen at work on his premises, but only a few of them had been used in copying Mr. Graves's pictures. The majority of the negatives from which he had been seen printing were not of Mr. Graves's prints, nor were they, to the best of his belief, copies of prints in which any copyright existed. He pleaded for commiseration, and urged that to inflict a fine of £5 for each subject would entail death on a man of his age. He had been able barely to earn bread and cheese to support a family at the work, and, with two exceptions, he had never sold pictures to be sold again.

Maurice Fleischhacker, a picture-frame maker in North Street, Whitechapel, proved that on the 8th, 9th, 11th, 15th, and 17th of March he purchased of the prisoner, at 3s. each, thirty-one copies of the pirated photographs, including all the subjects mentioned by the last witness.

The prisoner denied that Mr. Graves was the sole owner of the copyright, and said that a person could not be prosecuted for infringing it when the painter himself had not registered it.

In reply to the Court, Mr. Graves said he purchased the copyrights from the painters themselves, and that the first person who registered it at Stationers' Hall was considered the owner. The painters did not sell him the pictures.

Sir Benjamin Phillips, in remanding the prisoner, remarked that there was not the slightest doubt of Mr. Graves owning the copyright.

On Monday last the case was heard on remand, Mr. Chipperfield appearing for the prisoner.

After some further evidence from Mr. Boydell Graves and detective-sergeant Hancock,

Mr. John E. Millais, R.A., was called by the solicitor for the defence. Replying to him, Mr. Millais said:—In January, 1863, I sold the picture "My First Sermon" to Mr. Gambart, reserving the copyright, which he did not think valuable enough to purchase. The copyright was mine, and he paid me so much less in consequence of my retaining the copyright in my own hands. Some days afterwards Mr. Agnew called upon me, and told me he had bought the picture of Mr. Gambart, and that, understanding Mr. Gambart had not bought the copyright, he desired to have it with the picture, and I sold it to him. He gave me a check for 100 guineas for the copyright, and I assigned it to him. The copyright, in fact, was paid for before the picture was. I do not consider a picture completely sold until it is paid for, and my reason for saying that is, that I have more than once sold a picture in the same way as Mr. Gambart purchased this in this case, and it has afterwards been thrown on my hands. I only agreed to sell Mr. Gambart the picture. Nothing was paid by him in the first instance, on account of the price. On the 28th of January, 1863, Mr. Agnew gave me a check for the copyright, and on the next day Mr. Gambart paid me the price of the picture. I painted "My Second Sermon" in 1864, on commission from Mr. Agnew, and it was sold from the beginning. Both pictures went to the Exhibition before they were delivered to the purchasers. In the case of "My Second Sermon" I assigned to Mr. Agnew the picture and copyright together. Before "My First Sermon" I had sold pictures, reserving the copyright. I had an agreement with Mr. Agnew for "My Second Sermon." The witness then retired.

Mr. Chipperfield said a very important question in the case would be: What was the benefit an artist derived from the Act of 1862? and he proposed to show what was the system before the passing of that Act.

Mr. Thomas Faed, R.A., was next called. He said he painted the picture "Embracing an Opportunity," which represented a girl writing a letter in a quiet way. It was about 31 by 21 in. He afterwards painted a smaller one on the same subject—a *replica*. He did not know who had the picture now. He sold both to Mr. Gambart; the larger one first, and that was in 1865. He sold him the picture and copyright included, and gave him a memorandum to that effect. In the same year he thought he painted a companion picture to "Embracing an Opportunity," entitled "Perfectly Satisfactory," which represented a girl reading a letter. Those pictures had since been known as "The Offer," and "Accepted." There was a *replica* to the latter, and he sold them, pictures and copyright, to Mr. Gambart by a memorandum in writing as before.

At this point the examination was adjourned for a week; and, in the meantime, Sir Benjamin Phillipps said he would admit the defendant to bail in two sureties in £100 each, and himself in £200, after due notice as to the sufficiency of the sureties.

Recent Patents.

THE KINESCOPE.

BY M. LANGLOIS.

The following specification describes an invention of which some account appeared in our last volume. It is a contrivance in which, by rapidly bringing under the eye in succession certain images in positions representing successive phases of motion, the effect of actual motion is conveyed to the eye and mind. The images are of microscopic size, and are magnified by a small Stanhope lens. The following description is contained in the provisional specification, the complete specification being chiefly devoted to references to the diagrams deposited:—

This invention relates to an optical apparatus or toy, which the inventor calls a "photoscope," for showing or exhibiting minute or microscopic photographic images or pictures, and consists, according to one arrangement, in combining together, side by side, two or more Stanhope lenses, on the surface of each of which there is placed a microscopic photograph of the same subject or figure, but in different positions or attitudes. These Stanhopes are fitted in a guide contained inside a portable case or holder, which is provided with an aperture or spy-hole on each side of the case, and in the line of which holes the one or other of the Stanhope lenses is situate. A stud or button in connection with the lenses and in combination with an india-rubber or other spring passes through the side of the case. When this button is rapidly depressed and released by the finger the two lenses, with their respective images, are alternately and at minute intervals of time brought in the line of vision of the observer, and as the impression of one image is retained on the retina of the eye until the next image is presented to it the effect of animation or movement in the microscopic image or picture is obtained.

According to another arrangement, in lieu of using two or more moveable Stanhope lenses, one lens is employed fitted into a suitable holder in the top of a small case or box provided with a ground glass bottom or back. The microscopic photographic images or pictures are in this arrangement disposed in line upon a strip or strips of glass forming slides, which are moved in proper guides by a rack-and-pinion motion or otherwise, underneath or behind the lens. The different pictures may either be arranged so as to give the effect of life or animation, or they may be merely a collection on one slide of a number of distinct subjects, each to be viewed separately in a state of rest. In the first-mentioned case the microscopic photographs will be taken from one subject in different positions or attitudes, and the slide, when being exhibited, should be moved so as to bring the different pictures in rapid succession behind the lens.

THE ZIRCONIA LIGHT.

BY TESSIE DU MOTAY.

This invention is for improvements in preparing zirconia, and the employment of the same to develop the light of oxyhydrogen flame. The specification is as follows:—

Zirconia, or oxide of zirconium, in whatever manner it may be extracted from its ores, can be agglomerated by compression—for example, into sticks, discs, cylinders, or other forms suitable for being exposed to the flame of mixtures of oxygen and hydrogen—without undergoing fusion or other alteration. Of all the known terrous oxides it is the only one which remains entirely unaltered when submitted to the action of a blowpipe fed by oxygen and hydrogen, or mixtures of oxygen with gaseous or liquid carbonated hydrogens. Zirconia is also, of all the terrous oxides, that which, when introduced into an oxhdydrogen flame, develops the most intense and the most fixed light.

To obtain zirconia in a commercial state I extract it from its native ores by transforming, by the action of chlorine in the presence of coal or charcoal, the silicate of zirconiumin to double chloride of zirconium and of silicium. The chloride of silicium, which is more volatile than the chloride of zirconium, is separated from the latter by the action of heat; the chloride of zirconium remaining is afterwards converted to the state of oxide by any of the methods now used in chemistry. The zirconia thus obtained is first calcined, then moistened, and submitted in moulds to the action of a press with or without the intervention of agglutinant substances, such as borax, boracic acid, or clay. The sticks, cylinders, discs, or other forms, thus agglomerated, are brought to a high temperature, and thus receive a kind of tempering or preparing, the effect of which is to increase their density and molecular compactness.

I can also compress in moulds shaped for the purpose a small quantity of zirconium capable of forming a cylinder or piece of little thickness, which may be united by compression in the same mould to other refractory earths, such as magnesia and clay. In this manner I obtain sticks or pieces of which only the part exposed to the action of the flame is of pure zirconia, while the remaining portion, which serves as a support to it, is composed of a cheap material.

The property composed by zirconia, of being at once the most infusible, the most unalterable, and the most luminous of all the chemical substances at present known when it is exposed to the action of an oxyhydrogen flame, has never before been discovered, nor has its property of being capable of agglomeration and moulding, either separately or mixed with a small portion of an agglutinant substance.

Correspondence.

SARONY'S PATENT.

Sir,—When the fox found he could not get at the grapes, he called them sour, and "left." Those who cannot get at Sarony's grapes not only call them sour, but say they "can, an' if they would," get at and devour them without fear of interruption from the owner. To continue the metaphor, I am one of those who are about to give £5 for a bunch of these grapes, and I should like some security that I shall be protected in my enjoyment of them.

I am exceedingly obliged to Mr. Sarony for the very liberal terms on which he offers the use of the patent to photographers—I wish his price had been higher. The man who cannot afford to spend £5 on such a promising experiment as these pictures afford must have misused his opportunities most confoundedly, and scarcely deserves to be allowed to try this process. But my £5 worth of hatched papers will probably take me a year or longer to hatch into chickens, and my fear is that Mr. Sarony will perhaps listen to the benevolent suggestion of Mr. Fry, and give the process to the world; or take the disinterested advice of Mr. Gulliver, and supply single sheets, and thus do me out of the little monopoly I am going to buy; or, what is perhaps more probable, Mr. Sarony may throw up the patent at the end of his provisional protection, when the sheets could be supplied at 6d. each, against which I should have to fight with those for which I have paid 1s. 8d. Again, it would be worth knowing if Mr. Sarony is determined to protect his licencees by rigorously prosecuting any attempt to infringe the patent.

A question has arisen as to making these pictures of various sizes. I think experience teaches us that uniformity of size and name is a great element of success, and I should strongly recommend that the size first proposed by Mr. Sarony should be maintained, and no other allowed—for some time at least. W——

MR. SARONY'S PHOTO-CRAYON PORTRAIT.

Sir,—After reading the glowing accounts in your journal of Mr. Sarony's new portrait, I was anxious to know how he would overcome the difficulty of applying the lithographic sketchy backgrounds so that they would suit all portraits, and not infringe on the cheek or neck of a lady's portrait. Seeing one of them, last week, I was confirmed in my opinion that a special background would be necessary for some portraits. The one referred to was that of a lady with a dress having a low body, the background having been very carefully sketched in with lead-pencil round the neck and shoulders, the outline of which, had this not been done, would have been ruined. They are, however, a very pleasing picture, and, no doubt, will take, especially as cartes are now so little in demand. A very pleasing and soft effect may be obtained by taking a tracing on vegetable paper, transferring this outline to either prepared artists' millboard, academy board, or canvas (strained or unstrained), and then slightly tinting in oil; for this an additional charge could readily be made, especially in portraits of ladies. The canvas or millboard can be had either of a grey or drab tint, which, I need scarcely state, will take either chalk or lead-pencil, for portraits intended to be plain.

As you are aware, three years ago I brought out a similar style of portrait on a tinted ground, the difference between Mr. Sarony's and mine being that his are on glass, and mine on paper.—I am sir, yours obediently, Walter Petty.

30, Regent Street, London, and
Sidcup Green, Kent, S.E.

NEW PHOTO-CRAYON PORTRAITS.

Dear Sir,—Having for a long time felt the gradual falling off in my profession as a photographer, and often feeling somewhat perplexed as to what could possibly be introduced, either to bring in the people as in the palmy days of cartes, or to utilize the enormous stock of negatives now lying dead upon my hands, I hailed with great pleasure the photo-crayons as introduced by that enterprising man, Mr. Sarony, of Scarboro'. I have tried the process with great success this week, and must say am astounded at the results. I have made application for the lithographic sheets and the licence for using them, and am promised them by the end of the week; when I obtain them I shall have great pleasure in forwarding you one, if you will favour me with your opinion as to how it compares with those you have seen of Mr. Sarony's.

I have read with great interest all that has appeared in the News and your contemporary as to what has been invented six, ten, or twelve years since by Mr. John Bull or Monsieur Francais, and at once come to the conclusion that we should mete out justice to whom justice is due. Whatever may have been done before, this, to my mind, is a very great improvement; or why should it call forth such an exclamation from the gentleman you quote: "Ah, but these are cleverly touched pictures!" Or that of the rev. president of the society, when he said, "But can these be simple photographs?" But I need not go from home for similar expressions, for an artist friend of mine, who happened to come in just as I had dried my first plate and placed it upon a piece of coarse-grained white drawing-paper, gave it as his opinion that no touching could improve, but rather mar, the beautiful effect.

Trusting you will excuse my trespassing upon your valuable space, and enclosing my card, I beg to subscribe myself as Thankful

For all things that will assist in reviving trade and keeping up prices, be they patented, or be they not patented.

Leeds, March 24th, 1869.

MR. SARONY'S PHOTO-CRAYONS.

Dear Sir,—I have just received a sample of the "Photo-Crayon Portrait," and I think I may congratulate photographers, as well as Mr. Sarony, upon his having discovered a method of producing, to all appearance, a beautiful work of art, by the simplest photographic means in connection with so small an accompaniment. It is remarkable how the grain of the background takes entirely away the coarse texture of a photograph of that size, and gives it the perfect grain of a real crayon drawing.

And another thing Mr. Sarony has done; namely, given photographers the means of producing a thing of real taste and beauty at a comparatively small cost, and that is something in these eventful days.

Many, I have no doubt, will say, as usual in such cases, "Nothing new; I have seen it for years." Such are too weak to see that all discovery is but the combination of observed outlying principles for new uses and purposes; the question is, where have such portraits been seen before?—I am, yours truly, John Beattie.

No. 2, Westbourne Place, Clifton, Bristol, March 21st, 1869.

MR. SARONY'S PHOTO-CRAYONS.

My Dear Sir,—Concerning Mr. Sarony's patent, much has been said, but no one has pointed out this great objection, viz., that photographers will have to bind themselves to the use of particular vignette designs, which, in general practice, will be found utterly unsuited to some subjects.

It is but due to the profession in these days, when patents for slight modifications of old processes are likely again to become rife, to show the weakness of thus trying to trammel the art, by pointing out that any photographer of artistic taste can, if he likes, produce all the effects of Mr. Sarony's portraits by working on the varnished side of the transparency with lithographic chalk, and backing up with drawing-paper. By this plan results suited to any style of portrait may be produced without infringing any patent whatever.

The above idea, according to the practice of some, would form the basis of a patent.—Yours truly, E. D.

March 29th, 1869.

[Mr. Sarony produces a variety of vignette designs to suit various pictures. As no one is bound to employ the process at all unless he finds he can benefit by it, it is folly to talk of trammelling the art. All the modes of practice, in use before Mr. Sarony's was introduced, are still as free as ever. A new style is introduced, and the inventor says, If any one wishes to profit by my idea, he must allow me a small share of that profit. Surely there is nothing unreasonable in this!—Ed.]

MR. SARONY'S NEW PROCESS.

Sir.—Mr. Burgess, in last week's News, seems to have entirely misunderstood me. So far am I from underrating this beautiful process, that I was one of the very first to pay Mr. Sarony £5 for a license to work it. I am free to confess that, before doing so, I took the simple business precaution of inquiring whether the patent could be sustained. At first I feared whether such could be the case, but soon came to the conclusion that it was a good and valid patent.

I have fully succeeded in producing the pictures, as have also others who have taken licenses, and I look forward to a considerable business in this new style.

It is very satisfactory to find that, in order to produce the best results, a great deal of care and skill are required.—I am, respectfully, Samuel Fry.

TENTS ON WHEELS.

Sir,—I read with interest, in your last number of the Photographic News, the discussion on wet and dry processes, and should have been thankful had it pointed out the maker of a roomy yet really light tent for working 10 by 8 plates. All the tents I have seen are far too heavy and cumbersome, and those I have met with on wheels require to be unshipped and placed on a tripod-stand, which takes up time, and is troublesome. Why should not the tent be placed on wheels at such a height as to be at once available for use the moment you cease wheeling it? Most of the large tents now advertised require two persons to tip and carry them, which is often (in out-of-the-way places especially) a great inconvenience. If any of your readers would describe a really light and portable tent for 10 by 8 plates, I and many other amateur photographers would be grateful.—Yours, &c.,

March 29th, 1869. C. W. H.

ANOTHER DIRECT CARBON PROCESS.

Dear Sir,—Seeing a short description of "Another Carbon Process" in the last issue of the News, described as possessing many good qualities, I inclose you a sample of a process in carbon printing by an intimate friend of mine; and, although the enclosed is not perfect by many degrees, yet, since it was done, my friend has made the process all that can be desired. But, unlike all carbon methods which would-be patentees are quarrelling about, it is not transferred to or laid on the paper which carries it, thus easy to crack or peel off, but it is at once printed on the paper. There is no transfer at all necessary, and the picture, as you see, is in the paper, similar to a silver print. If you deem it worth while, I think I can get full particulars of the process for your next issue. I have written the above hastily, not having had time to communicate about the matter.

A little of your space for this note will oblige in your next. —I am, sir, yours respectfully, John Beattie.

2, *Westbourne Place, Clifton, March 29th*, 1869.

[The print enclosed has most excellent qualities, quite peculiar to itself, different to ordinary carbon prints. The half-tone is excellent, and the blacks are like those of an engraving.—Ed.]

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The ordinary monthly meeting of this Association was held on Tuesday last, the 30th ult., at the Free Library and Museum, William Brown Street, Mr. O. R. Green, President, occupying the chair.

After the minutes of the former meeting had been read and passed, the recommendations of the Council in reference to prizes were discussed, and it was decided to offer the following:—

1. A prize of the value of £2 for the best year's work, entirely the production of the competitor.
2. A prize of the value of £1 for the best picture not less than fifty inches area, entirely the work of the competitor.
3. A prize of the value of £1 for the best photograph under fifty inches area, the entire work of the competitor, except preparation of the plate.
4. A prize of the value of 10s. for the best transparency, the plate to be prepared by the competitor.
5. A prize of the value of 10s. for the most artistic photograph.

It was also decided to distribute these prizes at the meeting in November.

Further recommendations of the Council in reference to the issuing of a circular, and making the next meeting in April a popular one, so that members may bring their friends, were agreed to.

Mr. C. O. Ellison and Mr. Llewellyn Nash were elected members.

The paper of the evening was then read by Mr. W. H. Wilson, subject: "The Collodion and Preparation of the Collodio-Bromide," being the second of the series of papers on the collodio-bromide process. The paper will appear in our next.

A discussion ensued, principally on the question as to the amount of free nitrate of silver desirable in the film. Opinions differed as to quantity.

Mr. Wilson thought that for beginners the excess should not be more than the amount mentioned in his paper.

Mr. Phipps said a convenient mode of testing for free nitrate was to dip a piece of clean copper into the collodion; this would be blackened if the slightest trace were present.

The following objects of interest were shown:—

By Mr. Watling: A photograph on glass accidentally burnt-in. A useless print having been thrown into the fire, the collodion film had been destroyed, and the image fixed on the glass. It was sufficiently non-actinic to be employed as a negative, and a print from it was also shown.

By Mr. Forrest: A volume of photographic scraps.

On the motion of Mr. Phipps, seconded by Mr. R. Cooke, a vote of thanks was passed to Mr. Wilson for his paper, and the meeting soon afterwards separated.

◆

Talk in the Studio.

Photographic Society at Clifton.—We learn from our esteemed correspondent, "Ennel," that a Photographic Society, long required in the West of England, has just been established at Clifton, a meeting having been held on Wednesday, the 24th instant. We shall duly record its progress and its proceedings in these columns, and hope for it every success.

Long Fuming.—A correspondent of the *Philadelphia Photographer* says:—"I use a 35-grain silver bath (without ammonia), and float half a minute. I fume ten hours, and to that I attribute all the excellence of my prints. The paper turns yellow from long fuming, but comes all right again in toning and fixing. I used to fume twenty minutes, but one night I forgot it, and left the paper in the fuming-box all night. I made prints upon it with such good results that I have practised it ever since."

Photographs in Cemeteries.—The *Philadelphia Photographer* says:—"Photographs in tombstones are discussed in England. Hundreds of them may be seen in our cemeteries—and some not seen, having faded.

Diamond Cut Diamond.—A swindler in New York has been sending out circulars offering to dispose of exact copies of genuine United States Treasury notes in sums of 100 dols. for 15 dols. Some of the receivers, supposing that they could procure counterfeit money at a very low rate, remitted the money, but in exchange obtained photographic specimen cards of the Government currency issued by the Treasury department, and legitimately sold for 10 c. each.

To Correspondents.

PRACTICE AND PRICES.—We have received several letters discussing the question of prices as raised in recent letters by Mr. O'Connor and Mr. Talley. As the arguments in most involve a personal character, based on the individual interests of the gentlemen, it will be obvious that we cannot publish them. Mr. O'Connor wishes to reduce the matter to a very practical issue, and offers a challenge, at £20 a side to Mr. Talley, each to visit London, and, in our presence, prepare his chemicals and produce pictures, the best, of course, to win. Unfortunately, such a competition would not decide any question of public interest. "A Sheffield Photographer," who complains that Mr. Talley injures the profession as well as himself by charging too low rates, writes at considerable length, and very reasonably, on the subject; but, as it happens, his arguments are built on personal premises, and are inadmissible for publication. We have always earnestly condemned the tendency to reduction in prices, as it inevitably tends to reduction in quality, and to the impoverishment of the artist; thus, at one operation, injuring the art and its professors.

OLYMPUS.—Different samples of paper require slight differences in treatment, as Dr. Liesegang has remarked. The difference may be made in the strength of the acids, or in the temperature. In your case the addition of a little water to the mixed acids would effect the required improvement. The pyroxyline obtained is soluble, but makes the collodion too thick, you state. Add a little water to the mixed acids, say a drachm or a little more to each ounce, and try the result; or immerse the paper before the acids have quite cooled down after mixing. To ascertain how soon you may do so without risk of the paper dissolving, put in a small piece from time to time, and watch the result. As soon as a piece immersed does not dissolve, the mass may be put in. Remember, in making pyroxyline, that weak acids and high temperature both tend to the production of a sample which will give a thin, limpid collodion; and a modification of Dr. Liesegang's process, in either direction, will have that tendency.

FRED. YOUNG.—To obtain an enlargement from a print, the negative not being accessible, the simplest plan is to produce an enlarged negative at once, as there is nothing of sufficient importance to be gained by multiplying the processes. Place the print in a good light from all directions, get the image of the required size, and give a good long exposure. It will be difficult to obtain a very perfect result; but a little skilful retouching will probably be of service. 2. Short immersion in the nitrate bath is only recommended as a means of securing freedom from fog when there is a tendency to that defect, as it also tends slightly to reduce sensitiveness. In Mr. Gordon's and other dry processes, in which a highly bromized collodion is used, a full time of immersion in the nitrate bath is desirable to secure sensitiveness, as fog can easily be checked by adding a trace of bromide to the developer.

W. J. A.—The probable cause of your fog is the formation of acetate of silver in your bath. We never recommend the use of acetic acid in the bath, as we have [illegible] up for that of nitric acid. It is probable that the addition of one or two drops of nitric acid to each ounce of bath will relieve you. Also reduce the strength of your developer to 15 grains per ounce, adding the same proportion of acetic acid as at present. The addition of a little gelatine to the developer may prove useful.

INQUIRER.—The colour of the yellow glass forwarded is not by any means perfectly satisfactory. It is much too light; a deeper-tinted orange tint would be better. The precautions we before suggested will, however, make it safe.

PHOTO (Ashton).—The probable cause of the streaks from the silver solution running in irregular streams is the repellent character of the collodion. The addition of one drop of distilled water to each ounce of collodion is sometimes a cure. Sometimes age only will cure. An excellent palliative consists in keeping the plate in motion all the time it is in the bath, and not removing it until the solution flows evenly. 2. The sensitizing preparation recommended by Mr. Spiller was a mixture of gum and glue.

INQUIRER (Second).—Add to each ounce of collodion 3½ grains iodide of cadmium, 2 grains of iodide of ammonium, and 1 grain to 1½ grain of bromide of cadmium, and you will have a collodion which will work well and rapidly.

M. R. S.—The size of the plate in Mr. Sarony's photo-crayons is 14 by 12; the size of the outer frame about 23 by 18. The backings are in different tints of rough drawing-paper, such as grey, cream colour, white, &c. Mr. Sarony will supply a completely mounted specimen with frame for £1 (see this week's advertisement).

C. W. H.—The question of light and convenient tents is one which has been much discussed, opinions always remaining divided; some preferring one form and others another. In the article by Mr. Wilson, which appeared in our pages a few weeks ago, a light tent is described, which Mr. Wilson has used for years with success. Various forms of tents on wheels were described and discussed in our Eighth Volume (1864). It is probable that some of these suggestions may meet your wish.

F. FITZ JAMES (Huddersfield).—Almost all metallic poisons may be absorbed through the skin and have an injurious effect; and we have often cautioned photographers against unnecessarily immersing the fingers in such solutions, as horn forceps answer the purpose quite as well. Chloride of gold, nitrate of silver, iron solutions, mercurial solutions, cyanide solutions, bichromate solutions, may all be injurious. See an article on the subject in our Eleventh Volume, page 440, in which you will see we have anticipated your wish. 2. We fear the idea of printing-in clouds from lithographs would scarcely be popular with photographers; but thin paper cloud negatives printed from transparencies might possibly find a sale. 3. The lens you have ordered is one of the best you could have for the purpose. 4. For pure landscape the wide-angle landscape is more suitable than the other lens by the same maker. Thanks for the prints; they are both good.

ENNEL.—We regret that we have not copies of the rules of photographic societies. Your best plan will be to write to the secretaries of the societies, which you will find mentioned in our YEAR-BOOK.

[illegible].—You will find excellent formulæ for the calotype process given in our number for January 15th last. 2. Yes; you will save the silver as a chloride.

J. D. M.—After a first rinsing with distilled water immediately on leaving the bath, common water may be used for thorough washing. 2. The gum preservative generally turns a dark colour a short time after it is mixed. 3. We cannot tell how long the preservative will keep; but as such a mixture is very likely to ferment when kept, we should prefer to make it fresh. 4. It is better to moisten, before development, with distilled water. It is possible, under some circumstances, to take great liberties with the process, and still get good negatives; but it is not wise to run risks. 5. A primary consideration in choosing a bromide is its solubility, especially where a large proportion is used. Bromide of potassium, being very sparingly soluble, cannot well be used. Bromide of cadmium, being more soluble, is most convenient where much of the salt is required. The second consideration is the effect on the physical character of the collodion of the different salts. The cadmium salts tend to make the collodion thick and gelatinous, whilst the alkaline bromides make it limpid; hence it is sometimes desirable to use a mixture of bromides of two bases. 6. Much depends on the amount of bromo-iodide salt present, and the proportion of soluble cotton, as to whether you obtain a creamy or a bluish film.

K. HEARD.—A pure silver dipper left in the bath ought not to do any harm to the bath; but if there is any trace of free nitric acid—which, as a rule, there is and should be—it will, of course, attack the dipper. 2. As shellac is soluble in alcohol, and alcohol necessarily accumulates in the bath, it may become sufficiently affected to injure the silver solution. We should, therefore, hesitate to use it. 3. Mr. Robinson's ordinary developer is made with 15 to 20 grains of protosulphate of iron, 15 to 20 minims of glacial acetic acid, and enough alcohol to flow, in an ounce of water. As a rule, in his practice, he has not found advantage from other additions.

E. D. T.—If you have any friend versed in photography, he will probably aid you with advice in selecting suitable apparatus for your individual case; if not, you may perhaps do well to purchase one of the complete sets advertised by any of the respectable dealers, whose advertisements you will find in our business columns.

ONE OF THE SMALL MEN.—Your letter contains some excellent hints, but is not suitable for publication in its present form. We will condense the information for another issue.

E. J. H.—One of the chief reasons for the difference in price between French and English lenses is, not simply that the latter are generally better, but that you can, as a rule, rely upon the excellence; you practically pay a certain amount for the guarantee. That being the case, you will see that some amount of uncertainty attaches to the quality of French lenses generally. You may get very good ones, but not certainly; and you pay a proportionately less price, and take the risk. Our experience with the lenses of various French makers is insufficient to enable us to form an estimate of the comparative excellence of the instruments of various makers. 2. A pair of good quarter-plate portrait combinations will work well for instantaneous street views, and groups.

ERRATUM.—In the article on Plate Cleaning, by L. G. Kleffel, in our last, for convex side of the glass, read concave.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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THE NEW FINE ARTS COPYRIGHT BILL.

The law of copyright relating to works of fine art has been confessedly, for some time, of a very unsatisfactory nature. It has not only been embodied in several Acts made under conditions which have ceased to exist, and having no provision for new conditions which have come into operation; but many of the Acts were ambiguous and uncertain in language, the most recent—that of 1862—being notoriously clumsy and indefinite in its provisions. It has been generally understood that the subject would be brought under the attention of the present Parliament, and the draught of a Bill has been for some time in existence. That Bill has already been presented to the House of Lords by Lord Westbury, and will duly come on for consideration. Its aim is to amend and consolidate the law of fine art copyright, and to include in one Act all the provisions necessary for constituting the law of the case.

As photographs were, in the Act of 1862, formally included in the provisions of fine art copyright, so they are again included in the present Bill; but unless some considerable modifications and additions are made in the Bill before it becomes law, we have no hesitation in saying that it will be much less than satisfactory, and much less than just, to the mass of professional photographers. We may remark, at the outset, that photography appears in the Bill to have been regarded chiefly, if not solely, from one point of view: it is looked upon as a means of reproducing or copying pictures, and not as a means of producing original works. No allusion to photographic portraiture exists in the Bill, and no provisions whatever are made for the special relation between a portraitist and his sitter—no attempt of any kind to define the present doubtful state of the law. The Bill having been drawn chiefly in the interests of, and as relating to, paintings and engravings, it is not unnatural that photography is chiefly regarded in its relation to these, and without special consideration for photographic portraitists, who have taken no steps, offered no suggestions, on the subject. If portraitists are concerned to have their rights defined, now is the time for definite action, in order that the Bill may be modified in committee. If they are content with the provisions as they stand, and willing to rely on the improbability of the law being put into oppressive action in the matter, well and good; but it is well that a distinct understanding of the case should prevail.

According to the view of Mr. Peter Le Neve Foster, who has given the subject considerable attention, and who is, moreover, as he has informed us, fortified in his opinion by some eminent legists, by the operation of the existing Fine Art Copyright Act the copyright of an ordinary portrait vests in the sitter, and the photographer is liable to all the penalties of piracy if he dispose of a single copy of any portrait he may take for a customer without that customer's leave and licence in writing. The clause in the Act dealing with the question is so clumsily constructed, however, as to leave room for some doubt as to its actual meaning. But what is doubtful in the present Act is made certain in the Bill embodying the proposed new law. The wording here leaves no room for question: "Where any person, for a valuable consideration, shall cause any new and original work of fine art to be designed or made, or when any work shall, for the first time after the passing of this Act, be sold or disposed of, upon payment or satisfaction of the consideration or purchase money, all the copyright of the author in such work shall thereupon vest in and become the property of the person who shall have caused such work to be designed or made, or who shall have purchased the same," &c.

This arrangement is doubtless a satisfactory one as regards paintings, but the difficulty is, that no special provision is made for works so obviously different as original photographs. It is probable, indeed, that the question of copyright in connection with ordinary photographic portraiture has never been considered at all; or, if considered, merely with a hasty determination that of course a man has the copyright in his own portrait. Such a view of the case is for the moment plausible, but may easily be shown to involve some curious difficulties, as well as to be unjust. For instance, if, as we hold is undoubtedly the case, the photographer be the owner of the negative which he takes in order to produce the portraits he has undertaken to supply, under the operation of the proposed law he would be owner of a negative the copyright in which belonged to another, whilst the sitter would be owner of a copyright which was useless, because he had no control over or use of the negative. The photographer would be custodian of that which he was not at liberty to use, nor at liberty to destroy, because another had an intangible and unavailable property in it. The question of the ownership of the negative has never been legally raised or decided; photographic portraitists hold, of course, that the negative is their own property—that in the regular practice of their profession they undertake to supply portraits, not plates to print portraits from. But if a case were to arise, a very strong argument would be available to those holding the opposite view, in the fact that this Bill gives the copyright to the customer; hence it might with much force be argued, that as the copyright without the negative would be useless, the negative was doubtless to be regarded as the property of the sitter.

It might be argued that the possession of the copyright in an ordinary portrait could not be of much use to a photographer, and in an extraordinary portrait—that is, of a popular person—the copyright would be only valuable in case of permission to publish, for, of course, we assume that, no matter to whom the copyright might belong, the photographer would never publish or sell copies of a portrait without the consent of the sitter. It is true that the copyright in a portrait would rarely be of value to the photographer, except in a protective sense: it would give him the right to protect his own work from piracy; it would save him from the injurious action of base copyists, who injure him commercially by producing cheap copies of his work, and injure his reputation by issuing nasty copies of his work, the design or arrangement in which, being known to be his, suggesting, of course, the idea that the inferior copies are his productions.

It is unnecessary, however, to go into this subject at length here. There can scarcely be a question, we imagine, as to the expediency for a clause making special provision for copyright in photographic portraits, having relation to precise conditions of the case, which are necessarily distinct and different from those arising in the commission or sale of a painting or similar work of art. If the question be properly placed before the promoters of this Bill in committee, we apprehend no difficulty would be experienced in securing a proper recognition of the matter. It is a question for portraitists, and to them we commend the matter in time.

We shall now proceed to give a brief synopsis of, and such extracts from, the Bill as relate to the interests of photographers.

The Bill, after providing for the abrogation of previous Acts, proceeds to certain definitions of terms; and it is worth while mentioning, as an able advocate in an American Court recently denied that a certain Copyright Act had any reference to photography, inasmuch as the term "author" used in the Act was inapplicable to a photographer, that here the "author" is defined as "he who has designed or made any new and original work of fine art;" and "work of fine art" is defined as "every drawing, painting, photograph, sculpture, and engraving, as hereinbefore interpreted." The Bill then proceeds:—

3. The author of every new and original work of fine art, if made, or first sold, after the commencement of this Act, such author being a British subject, or resident within the British dominions at the time such work shall be made or first sold, and the assigns of such author, shall have the copyright or sole and exclusive right of copying, reproducing, and multiplying such work, and the design thereof, in the British dominions, by any means, and of any size, for the term of the natural life of such author, and thirty years after his death, but subject to the following conditions and restrictions; (that is to say,)

(1.) Where the design for any new and original work of fine art shall not have been composed and made by the author of such work (as, for example, in the case of a photograph or an engraving from a picture), his copyright therein shall not extend to and include the right to copy, apply, reproduce, or multiply such design for the production of any other work of fine art, without the written licence for that purpose first obtained from the proprietor of the copyright in such design.

(2.) Where any person, for a valuable consideration, shall cause any new and original work of fine art to be designed or made, or when any such work shall for the first time after the passing of this Act be sold or disposed of, upon payment or satisfaction of the consideration or purchase money all the copyright of the author in such work shall thereupon vest in and become the property of the person who shall have caused such work to be so designed or made, or who shall have purchased the same as aforesaid, unless the author of such work, at or prior to the time of delivering the same to the person who shall have purchased or caused the same to be made, shall (by any note or memorandum in writing to be signed by him or his agent for that purpose) have made any contract to the contrary relating to the copyright in such work; and any such contract may be in either of the forms applicable for the purpose as given in Part I. of the second schedule to this Act, or to the like effect: Provided always, that no such contract shall extend to or authorise the author of any work of fine art to make any repetition thereof, unless the same shall have been expressly stipulated for by him in such note or memorandum as aforesaid.

(3.) At any time after the registration of the copyright in any work of fine art, the author thereof and his assigns shall be at liberty to sell his *bona fide* sketches and studies for such work, without prejudice to any copyright which may be subsisting therein at the time of such sale.

Provided always, that nothing in this Act contained shall prejudice the right of any person to copy or imitate any work of fine art in which, or in the design whereof, there shall be no subsisting copyright; or to represent any scene or object, notwithstanding that there may be a subsisting copyright in some previous imitation of such work, or in some previous representation of such scene or object.

After certain provisions against the seizure for debt of sketches, studies, unfinished work, &c., the next clause proceeds as follows:—

5. Where any prints from new and original photographs, or impressions from new and original engravings, shall be published with and as illustrations of any book in which there shall be a subsisting copyright, they shall be deemed part of such book, and included in the copyright thereof, although the provisions of this Act may not have been complied with as to any or either of such photographs or engravings.

Provisions in reference to engravings, to registration, &c., follow. The penalty for infringement is stated as not exceeding £20 nor less than £2 for a first offence, and not less than £5 for each subsequent offence, together with forfeiture of the pirated prints and the negatives or plates producing them.

Provisions against fraudulent signatures or alterations in pictures follow next; and then comes an important arrangement for detecting piracy at the fountain head. Hitherto, whilst it has been possible frequently to dam up the streams, it has been difficult to trace them to their source, and so arrrest the evil in its beginnings. It is provided that any person in possession of piracies may be compelled, under heavy penalties, to afford full information as to the source from which they have been obtained. Provision for registration, as at present, is made, with this difference, that whilst in the present Act it is optional with the proprietor to attach a copy of the photograph to the memorandum of registration, it is here made a duty. The fee for registration will remain one shilling, and proper arrangement is made for search, for copies of entries, &c. The Bill, which is very copious in its general provisions, seems to meet every case but that of the portrait photographer, and to promise, otherwise, an excellent and comprehensive measure.

PHOTOGRAPHS "AUX DEUX CRAYONS."

We recently called the attention of our readers to a fashion, which had come considerably into vogue in the United States, of producing photographic portraits on tinted papers, or of dyeing or tinting the albuminized paper after the print was produced. Since then we have been favoured with some examples of the popular style in two tints, and named, after certain popular lithographic drawing studies, "Aux Deux Crayons."

The prints before us range from card size to 16 by 12 inches, all vignette busts. The pictures are exceedingly effective and pleasing: the appearance of much finish being gained by very simple means. A portrait of General Meade, of the Federal Army, before us, is an exceedingly fine photograph. It has been dyed of a warm India paper tint, or, rather, of a delicate salmon colour. The lights in the eye, on the forehead, nose, &c., are neatly put in with Chinese white. The linen collar, and the lights on the adornments of the undress uniform he wears, are also touched with the same pigment. Another equally effective picture is the portrait of Mr. H. D. McKean, Editor of the *Philadelphia Public Ledger*, the general tint in which is deeper and warmer. Here the linen only, and the light on the forehead, nose, and eyes, are put in with body colour. A portrait of Mr. Edwin Booth, the American tragedian, is singularly effective. In some of the pictures there is an additional slight indication of colour in the cheeks and lips, which so readily harmonizes with the flesh-like tint of the half lights of the picture, that the effect of flimsiness and vulgarity, which generally results from tinting the cheek without properly colouring the picture, is quite absent here.

It is to be noted, that as the contrast between buff, or India paper tint, and deep blacks, is necessarily less striking than between black and white, an effect of greater softness pervades the whole picture than is generally seen in ordinary prints, the minute touches of white also increasing the effect of brilliancy. It is known to many photographers that the harsh effect of a print from a hard negative may be materially diminished, either by using a tinted paper, or by slightly exposing white sensitive paper to the light for a short time, to lower its tone, before printing on it. In the pictures before us this effect is well illustrated: the negatives are not hard or imperfect, but really of good quality; but the prints possess a rare effect of softness, from the mass of the lights having the slight tint. The addition of the white touches, in such cases, practically increases the range of tone, and adds great brilliancy and force. The only defect which strikes us is the slight incongruity of the two surfaces: the Chinese white has a peculiar effect, being, of course, a dead patch impasted on a glazed surface. This would be entirely avoided by adopting the plan we recently described, in which the lights are covered with melted wax, by means of a camel's-hair or sable pencil, previous to submitting the print to the dyeing process, the lights so protected remaining untouched by the colour, and, in the finished print, showing no incongruity of surface whatever.

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SUNNING THE NITRATE BATH.

According to the experience and suggestions of some photographers, the exact effect of sunning the nitrate bath is not yet perfectly understood. Mr. McLachlan, it is well known, when communicating his discoveries in wet collodion photography last year, attributed some kind of occult influence to the continued action of sunlight on a concentrated solution of nitrate of silver. Probably one reason why Mr. McLachlan's statements did not meet with more universal acceptance was the somewhat mystic character which he ascribed to the action of light. Everyone knew that sunning a bath had a restorative action on a disordered bath. Most photographers knew, as the *rationale* of that restoration, that light acted upon the organic contaminations of the silver, blackening and reducing them, and so eliminating them from the solution; and, believing in the normal and recognized action of light, they did not readily recognize the occult or nebulous notion of the matter put forth. Nevertheless, there were many who said that, after all, "there was something in it."

Mr. Newton, an able American photographer of experimental habits, some time ago made a report to the Photographic Section of the American Institute, on his researches into the subject of Mr. McLachlan's statements. We published this report at the latter end of our last volume, with a brief comment. At the March meeting of the Section, held on the 2nd ultimo, Mr. Newton made a final report on the sunned alkaline bath *a la* McLachlan. He said: "Longer use of this bath had confirmed him in his earlier opinion, and he felt fully justified in urging the craft to adopt it. He called attention to the remarks in the Photographic News, in which the editor of that journal states that he, Mr. Newton, had overlooked the fact that continued action of light on a solution of nitrate of silver reduced the nitrate of silver, and liberated nitric acid. Mr. Newton contended that any such fault could have no possible bearing upon the subject, unless it is to be inferred that sufficient acid had been liberated to change the bath from an alkaline to an acid one. He called attention to the fact that when he first reported upon this subject he exhibited with the negatives a portion of the bath, and which, by the use of litmus paper, was proven to be intensely alkaline. Mr. Newton said, in conclusion, that it was evident that a radical change takes place in the bath from the action of the solar rays; such change is not caused by the liberation of nitric acid, from the fact that a bath alkaline in its reaction before it has been exposed to the sun will not work upon the addition of said acid, no matter how much or little is added thereto, providing it is not made acid by such additions. He had also found that the addition of silver to an alkaline bath, after it had reached proper working order, did not affect it, but that the addition of water, no matter how pure, necessitated its re-exposing to the sun."

The subject of Mr. Newton's investigation is too interesting to admit of quibbles or misunderstandings. In our brief comment on his former report we were anxious that no misunderstanding should prevail to mar legitimate conclusions on an important subject, and we felt it necessary that the possible action of light in neutralizing an alkali by the acid liberated in the process of reducing nitrate of silver should be distinctly recognized. This was the more necessary because the restoration of the original blue colour to reddened litmus was regarded as conclusive proof of the alkaline condition of the bath, whilst it should be remembered that pure nitrate of silver will effect a similar change upon reddened litmus. We are glad, however, to note that Mr. Newton has taken pains to eliminate any possibility of doubt on this score by further experiment, in which he finds that the addition of nitric acid direct to the bath will not produce the same result, and therefore concludes that the liberation of nitric acid by the action of light is not the source of amelioration in the condition of the bath. This, of course, it is not: the amelioration is due, so far as we know, to the removal of organic compounds of silver with nitrate of silver by a reducing process. Nitric acid is liberated coincidently, and is incidentally of service; but it accompanies, and does not cause, the improvement.

Mr. Newton appears, however, to have satisfied himself that some radical change in the condition of the silver solution is produced by the action of light, and that brilliant and clear pictures can be obtained with a solution possessing a degree of alkalinity which would produce hopeless fog in an unsunned solution. We are not entirely unprepared for this statement, having personally experienced some marvellous results of the renovating action of light on a diseased silver bath, and having, on various occasions, similar results brought under our attention. Some years ago, Mr. Blanchard stated that he found that a bath which had been made alkaline and thoroughly sunned worked perfectly without the addition of acid, in some cases giving better and more rapid results than a new bath. We have heard similar experiences from many, but we have felt satisfied with the explanation afforded by the natural and recognized reactions taking place. Mr. Newton thinks that more is involved in the change than this, and the subject is sufficiently interesting to demand the most candid attention. Unlike Mr. McLachlan, he regards the water—or, at least, the combination of the water and silver—as the body chiefly acted upon by light, and, instead of exposing a concentrated solution of the silver salt to the light, to be subsequently diluted, he finds that after any addition of water, however pure, fresh sunning is required, whilst additional silver may be added with impunity. The fact of the beneficial effect of light on silver solutions seems unquestionably established; on the *rationale* of the operation the *dernier mot* remains to be said; and the subject is sufficiently important to gain the attention of all scientific and experimental photographers.

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ON SILVER PRINTING.

Plain Paper—Simpsontype—The Mezzotint Process.

BY A. DE CONSTANT.

At a moment when the carbon process and the Woodbury and Albert mechanical printing processes threaten, with their powerful means and beautiful results, to supersede silver printing in a very great measure, it behoves those photographers who, for certain reasons, are compelled to adhere to the old method of printing, to make the most strenuous efforts to improve the same in regard to the permanent character of the prints; their attention should likewise be directed to the elaboration of silver printing so as to obtain pictures of different tints, and possessed of those effects of relief and softness which are, fortunately, held in high estimation by the public. I have already discussed the question from this point of view, in recommending the use of plain, tinted, and other papers, and I return to it again for the special purpose of showing the degree of importance attaching to the selection of paper for photographic purposes, in consequence of the great difference which exists in the manner of sizing the various papers, the nature of the superficial coating influencing, in a very great degree, the beauty of the result.

In reference to the keeping qualities of photographic prints, I may here remark, that on a recent examination of my old albums I found that certain albuminized pictures, which had been subjected to a thorough toning and washing process, had preserved their pristine beauty intact, while other prints on the same material, which had been produced at the same date, and with precisely the same amount of care, were in a most deplorable condition; yellow and hideous, they marched onwards to destruction. As in the preparation of my prints I have employed many different descriptions of paper, it stands to reason that there must be good and bad albuminized papers, and that upon the choice of the one or the other depends life and death. This being the case, have we no guide nor means to help us in making a discreet selection? I am afraid not; and I would here express my regret that although chemists have given us methods for testing almost every photographic requisite, no one has yet made us acquainted with a means of verifying the quality of albuminized paper, or has even directed the bent of his researches in that direction. Nor are the trade advertisements, such as "The best in the market," or "The celebrated," calculated to lessen our embarrassment upon the subject. For this reason I would recommend, whenever the photographer is in doubt, to have recourse always to plain paper, which, while yielding a picture possessed of a greater or less degree of sharpness, always gives a guarantee of permanence, and does not carry with it the germ of destruction. The pictures upon plain paper in my possession, prepared and varnished in the manner described by me a few weeks back, are all of them as fresh as when first printed, the whites of the same being superior even to those of the best preserved silver prints. This is, indeed, a practical result of some value, for the pictures on plain paper were prepared by me between ten and twelve years ago. But theory should also be considered in regard to the question of permanence, and Simpsontype may be mentioned as offering a considerable guarantee on this point. The process is simple, easy, promptly set in action, and very rapid in producing prints which, as regards delicacy and softness, leave nothing to be desired. What is the reason, then, why such a process is not more generally used? Most probably from the fact that the pictures produced by its means in some cases lack depth and vigour, and, being always prepared upon brilliant surfaces, are difficult to manipulate. By remedying these inconveniences, however, the process would deserve a larger amount of public favour, on account of the high degree of sharpness and softness its results possess, qualities that at the present day are highly popular.

Simpsontype is a process to which I have devoted considerable study, and I believe, therefore, that I am in a position to give a few useful directions in regard to it. In the first place, as regards the support for the collodio-chloride, it is my rule to reject all enamelled and glazed papers, in consequence of the difficulty of their application to the purpose, and the inartistic effect of the results produced by their means; a stout paper, prepared with arrowroot of a very superior quality, and perfectly impermeable (a very important point), such as that supplied by the firm of Liesegang and Co., is what I prefer to use. At the same time, for those who prefer to prepare their own paper, the formula given by the Photographic News may be employed with advantage, as well as that used by MM. Geymet and Alker, of Paris, which is as follows:—

Water	... ...	1000 cub. centimetres
Gelatine	... ...	5 grammes
Arrowroot	... ...	10 „
Sugar-candy	...	20 „

The bath is used warm, and the paper floated thereon.

I may mention, by the way, as a practical detail, that if the paper is fixed at the four corners for collodionizing, it will bulge up in the centre; whereas if it is suspended at one corner by means of a pin, and the other three corners are turned up to prevent the liquid from escaping, the sheet of paper will remain perfectly flat, and the operation may be effected with perfect facility. Of all the formulæ for collodion employed by myself, I prefer that given in the first instance by the inventor, Mr. Simpson. But a subject of great importance in regard to the process, and one which does not seem to have been sufficiently studied, is the influence of the chloride upon the colour of the print. Thus, I find that the chloride of magnesium imparts a greyish tint, chloride of calcium a brown, strontium a very brilliant sepia, cadmium violet-black, and lithium a rose-coloured tint. Certain toning baths will modify these colours, but they are all produced at first with these tints, and thus they may be preserved, if an alkaline toning bath is employed, as I invariably use (acetate of lime and chalk), taking care that the solution is always old and weak. By means of these reactions, therefore, nothing is easier than to compose any desirable tint in the same way as the pigments are mixed in the carbon printing process. Thus, by mixing two parts of collodio-chloride of silver and cadmium with one part of lithium (a mixture which may be made without inconvenience), a charming violet-purple tint is invariably produced, such as is generally seen in fine carbon productions.

For the purpose of giving vigour to the pictures, and thus to correct the only defect of which we can reproach them, I have found that fumigation with ammoniacal vapour may be used with marvellous success; this operation not only imparts vigour to the picture, but gives it great depth of tone and relief. The result is, in fact, so decisive, that in placing together in a line three prints, of which one has not been subjected to the vapour, while the others have felt its influence, but in different degrees, it is impossible to believe that the three photographs have all been produced from the same negative. A fumigation of half an hour has given me the maximum amount of vigour. The printing in the frame is very rapid, and a metallic surface readily produced; but the print must not be allowed to go as far as that, although it is necessary to let the impression go as deeply as possible. By following exactly these directions, which it gives me great pleasure to communicate, it is easy to prepare pictures which, on account of their extreme softness and matt appearance, as also their slightly glossy surface, rival the finest carbon prints, and even surpass them in the beauty of the whites, which are always somewhat marred when a trace of gelatine is present. Collodio-chloride prints furnished by these means appear to me to be sufficiently brilliant and stable, but if there be any doubts upon the subject it is practicable, without further preparation, to coat them by means of a brush with a light varnish (as, for instance, Sœhnee's positive varnish), which renders the surface free from any chance of injury.

Although this communication has already exceeded reasonable limits, I am desirous of saying yet a few words upon a process which I consider a valuable means of modifying and correcting hard negatives and wrinkled figures: I mean Meinerth's mezzotint process. A complete description of this process has not yet been published, as the same is protected by a patent; but, in endeavouring to apply the suggestions furnished by the talented Editor of the Photographic News, I discovered what I believe to be a certain and reliable method of obtaining the desired result. As proposed by Mr. Simpson, I employed a box of pasteboard of precisely the same dimensions as the printing-frame, 8 inches in depth, and pasted inside with black matt paper. After having tried several mediums for placing between the negative and the sensitized paper, I arrived at the conclusion come to by Mr. Simpson: that a thin sheet of clear glass was the most suitable for the purpose. Nevertheless, I believe that a thin pellicle of solidified collodion, similar to what I have seen at Paris, might be advantageously employed. When the negative has been taken upon a thin glass it is by far the simplest plan to reverse the image and to print through the glass, although I prefer the interposition of a separate medium.

The whole success of the operation depends, however, upon the manner in which the box containing the printing-frame is placed *vis-a-vis* to the sun, for it is necessary that the sun's rays should impinge upon the image perpendicularly, and not enter obliquely or by reflection. To ensure this result the box should be placed at a window facing the sun, and turned to the right or left, and pushed backwards or forwards, until one sees in the shadow the four interior sides of the box; by this means one is always sure of the sun entering in the right manner, and of the success of the operation, for the box may be referred to and replaced in the same position without trouble. The exposure is pretty rapid, and the image should be printed somewhat deeply. In gloomy weather, when no traces of the sun are visible to guide the operator, the manipulation is more difficult; but if the illumination is good, the light upon the four interior sides is easily seen The only print I have seen of Meinerth's process, and which I owe to the kindness of Mr. Simpson, proved to me that the inventor had employed a very hard and dark negative. The process is, of course, only suitable for the manipulation of pictures of this kind, and would, of course, be totally inapplicable to the production of prints upon collodion paper from soft negatives.

I have something yet to say on the subject of tinted photographs and prints upon coloured paper, produced by me for the first time for the Paris Exhibition, and which seem to enjoy at the present time a more favourable consideration than I had even hoped for; but I will reserve my remarks upon this subject for another occasion.

[The specimen prints on fumed collodio-chloride paper, and the mezzotint photographs, with which M. de Constant has favoured us, are exceedingly beautiful and perfect.—Ed.]

THIEVES AND RECEIVERS AMONGST PHOTOGRAPHERS.

We have to call the attention of our readers to a narrative which we submit to them with the simple view to point a moral and to suggest certain considerations to dealers in photographic materials, and still more serious considerations to others, in relation to the mode of conducting the disreputable cheap-and-nasty photographic establishments.

Photographers are rather proud when their art is called in to further the ends of justice, but we are always grieved to record the instances where the police have to be called in to the aid of photography or photographers. In the most recent instance, Mr. Jabez Hughes, the photographic dealer, of Oxford Street, has been made the victim of systematic robbery extending over a considerable period of time. The report that appeared in the newspapers is very meagre, as well as inaccurate, and gives no idea of the peculiarity of the case.

For some time past Mr. Hughes and his manager, Mr. Werge, have been unable to account for the falling off of profits, considering the large amount of business transacted. This was the more difficult to explain as the accounts were accurately kept, and the assistants bore exemplary characters, most of them having been for years in the establishment. That dishonesty existed somewhere seemed evident. To test this, certain goods were carefully noted and compared with the daily sales, when the fact became revealed that there was being taken away gradually and almost daily a quantity of the usual photographic materials, more than was accounted for in the books. On one day there was missing a 60-grain tube of chloride of gold; the next it might be 5 or even 10 ounces of nitrate of silver; again it was a 20-ounce bottle or two 10-ounce bottles of collodion; and next it would be a quire or two of albuminized paper, or an ounce or two of pyrogallic acid. No heavy amount was ever taken at one time, but there was a continuous drain of small amounts of the current articles sold in the shop, such as might be supposed capable of being taken without being missed. It is needless to say that these continued small amounts in time amounted to a considerable money value. For more than a month these observations were made, first to be certain of the facts, and next with a view to discover the delinquent or delinquents.

Assistance from the detective police was at length solicited, who gave assurance that with time and patience they would solve the mystery. With their usual skill, these officers began their enquiries, and they soon discovered, what neither Mr. Hughes nor Mr. Werge suspected, that the porter, Joseph Ricketts, had a brother-in-law, Frederick Smith, with whom he constantly associated, and who was a photographer, and had a very humble place of business in New Street, Covent Garden. It was further discovered that this Smith eked out his living by the sale of photographic materials. The place he kept was one of those which disgrace the photographic profession, and which are well described as "dens," in which, although he took but very few portraits, he had sufficient materials to supply other low photographers at prices about half the usual rate; nitrate of silver, for instance, being sold at 2s. per ounce, and other articles similarly low. The clue to the mystery was now obvious; indeed, the police from the first felt it as necessary to know what became of the goods, as to discover who took them; for they argued that they would never be taken so regularly and systematically unless there was a ready method of disposal. The movements of the porter were watched, and it was some time before he was caught in the act. On the morning of March 30th, the porter, whose duty it was to take down the shop shutters and clean the windows before the arrival of the others employed, came an hour before his time, and after removing the shutters—the shop being locked, and to which he could not get access—while pretending to clean the windows, broke into the shop by entering through the fanlight over the shop door. He remained in the shop a little time, and came out by the fanlight with four quires of albuminized paper—two quires of Saxe taken from one drawer, two of Rive from another, so as not to be missed. He was immediately arrested by the two detectives and Mr. Werge, who were watching him, and the keys of the warehouse upstairs, which he had taken out of the shop, were found on him; these he attempted to get rid of on his way to the police station. Smith, the receiver, was then arrested in his bed, and on his place being searched several articles were found with Mr. Hughes's private marks on them, and some specially marked with the view to this detection. The prisoners, after a remand, were last Tuesday committed for trial. The porter has made a confession that all the things found at Smith's he stole, and that he did it all at the instigation of Smith.

It is gratifying to know that Mr. Hughes has thus discovered the thief, and still more so that he has secured the receiver and prime mover in this nefarious proceeding. The loss he has sustained he cannot accurately tell, but it must be very considerable, and he has reason to know that this has been going on for a considerable time.

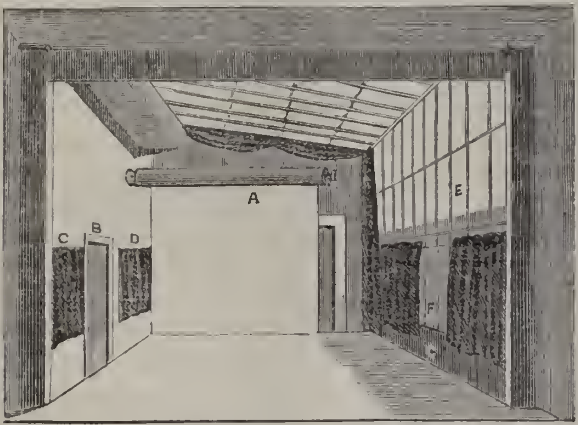
To our minds the saddest part of these revelations is, that it shows that a number of persons exist who, shutting their eyes, are willing to purchase materials, well knowing, by the price they pay for them, that they are dishonestly procured. It is another deeply humiliating aspect of the lowest phase of professional photography.

M. REUTLINGER'S STUDIO IN PARIS.

In our last volume we gave our readers such details of the construction and mode of working in M. Reutlinger's studio as we gleaned on a visit there. We subjoin a diagram and some further particulars, given by M. Reutlinger himself in a letter to our esteemed friend Mr. Wilson, Editor of the *Philadelphia Photographer*, with an early proof of which we have been favoured:—

"According to your request, I endeavour to give you today as accurate a description of my studio as I can, with accompanying sketch. If you can make anything out of it for publication I shall be most happy, as I am always anxious to do all in my power for the benefit of the fraternity.

"My studio, made of glass, and exposed to the north, is quite plain, and has a length of 9 metres 50 centimetres; but of this there are only 5½ metres built of glass; the balance was a small room, which was added to give it more length. The glass side is 2 metres 90 centimetres high, which is divided into three parts (see sketch).



"1st. The lower part, G, is a wall 50 centimetres high.

"2nd. The middle part, F, 1 metre 10 centimetres of stained glass.

"3rd. The top, E, 1 metre 30 centimetres of common white glass; the whole length of 5½ metres. The whole roof of this is also made of stained glass. I have, therefore, only 1 metre 30 centimetres of white glass, the balance of the light coming through stained glass. The whole width is 3 metres 35 centimetres, and the side wall being 4 metres 10 centimetres high, it gives a fall of 1 metre 20 centimetres to the glass-roof. To guard against the strong rays of the sun in summer I have a blind over the whole length of the roof, which has a height of about 1½ metres, and is managed by a crank inside of the studio. Besides, I have inside six different screens or curtains of blue calico, to shade the light from the top, and also to guard against the reflection of the sun from the houses opposite. Those curtains cover the whole length of the stained glass, so that most of the time I only get my light from the 1 metre 30 centimetres of white glass. As you may judge from the above, I have only one side where I can sit my models, and it is only when they sit for small vignettes that I can place them on the other side, on account of the shortness of the studio. This accounts for all my productions being lighted from the same side, which is very troublesome with a great many subjects. Another inconvenience is the small width. For this reason I am unable to have my backgrounds on frames, as is usually the practice. The only two I have I am compelled to place at angles, but I have eight others on rollers which are let up and down, with balustrades, chimnies, columns, &c., as auxiliaries. I use two instruments, one for cartes-de-visite with two objectives, from Dallmeyer, of London, whom I can strongly recommend to all my colleagues; the second I use for the taking of large-size portraits, cabinet portraits, cabinet vignettes, and also for reproductions and enlargements. I also use a great many other auxiliaries, which stand in my studio, such as chairs, stools, tables, pedestals, columns, head-holders, &c., which all other photographers use. You will see by this that the greatest caution and order, in the small remaining space, is necessary for the posing of persons, and many outsiders are astonished that so many pictures are made in such a small, insignificant room. One small door on the left, B, leads to a gangway, where the plates are polished, and on shelves are many boxes containing negatives. On this gangway opens the dark-room, which is very narrow, and receives its light from the studio through yellow glass at D. The other door, C, on the left, is a glass door with a curtain; this is seldom opened, and it leads to a very small room adjoining the dark-room, where the plates are prepared. This and the dark-room together have only a length of 2 metres 30 centimetres, and 2 metres in width. There is a table 64 centimetres wide on one side; on the other are basins for the receiving of the water for the development of the negatives, so that there is only 84 centimetres left to turn about. The gangway receives, also, its light from the studio through yellow glass, and also has an opening from the top, which is used more as a ventilator, especially in summer. It remains closed most all winter.

"As regards my way of working, the description of my baths, &c., I will give you in a second letter. As I write my letters in German, I have to get them translated into your language, and it is no small task. I shall, as soon as possible, do myself the pleasure to entertain you again."

"Ch. Reutlinger."

A SIMPLE AND EFFICIENT HEAD AND BODY REST.

[A correspondent sends us the following, which may be found useful to many of our readers.]

About two years ago I invented a head-rest and body-rest, fixed by one screw to the same support. It has been in constant use ever since, and gives thorough satisfaction. It is cheap, and easily constructed, very firm, and can be easily adapted to any position, and to a number of persons in a group, &c. I have for the stand a strong piece of timber, running right across the studio, behind the sitter, within a foot or so to the end of the building. This may be plain, and painted the same colour as the background, so as not to show, or in a moulding, forming the dado of the room. To this I have a piece of canvas nailed, the lower edge of which is nailed close to the end of the studio, for the sake of being safe from being broken by the feet, as well as to give distance behind the figure photographed. To the back of the dado, and along the end of studio behind it, there are strong slips of wood (about an inch square in section) screwed, as rails or carriers for the rests. The rests lay on the top of the dado, the lower ends butting against the end of studio. The head-rest and body-rest are separate pieces, placed side by side, with a wooden screw dropped between, with two cross-pieces; one catches the rails below, the other presses the rests above, the nut turned against the top one. The rests are about a yard long (lower part); upper part of head-rest very similar to the ordinary double-jointed or universal-jointed head-rest. The body-rest may be in one piece, or with only a lengthening provision. For a group, any number of these may be placed on the rails; and for a sitting vignette, the head-rest can be fixed to the chair. The background (which is on roller) can then be dropped over the dado to cover it.

THE COLLODIO-BROMIDE PROCESS.

The Collodion, and Preparation of the Collodio-Bromide.

BY W. H. WILSON.*

Since the efforts made by Messrs. Sayce and Bolton, in 1864 and 1865, to introduce the collodio-bromide process, the papers on the subject have not been very numerous, and little has been done to bring its merits before the photographic public. We, in this Society, have been working the process, since its introduction, with the greatest success, and few who have mastered it would think of going back to a dry process requiring the use of the bath, with its tedious and cumbrous manipulations.

I almost feel as if some apology were needed from us for not having done more to advance the claims of this process, believing, as I do, that it will eventually supersede all other dry processes. We have been content to work on, satisfied with the charming results, and with an enthusiasm only to be felt by those who have experienced the difficulties and uncertainties of most dry processes.

The object of this paper, and of the series of which it forms part, is to endeavour once more to bring the collodio-bromide process before our photographic brethren, and show the simplicity of the means by which negatives of a beauty unsurpassed by any other process may be produced with certainty and regularity.

This process does not yet seem to be much in use outside of this Society, and, judging from conversations with other photographers, much misapprehension exists concerning it. Suggestions have been made which tend to invest it with difficulties and deter anyone from making trials with it. That the process is not capable of improvement no person will assert, and experiments with this view should be encouraged; but mere variations, possessing no advantage over the original simple process, do no good, and serve only to confuse.

It is this simple process that I intend to describe; and that it is a good, workable process is proved by the large number of excellent negatives taken by it.

Very few words are needed concerning the pyroxyline. A specially prepared cotton is quite unnecessary. Some three or four years ago I had some difficulty in obtaining the required intensity, and made some "intense" cotton in acids at as high a temperature as 160°, whereby it was greatly disintegrated, and much reduced in weight. It did not bring me the advantage I sought for, which I found was to be obtained with ordinary cotton with proper treatment.

Any sample of good soluble cotton, such as may usually be bought at a photographic chemist's, suits admirably. Of course, a pyroxyline giving a very horny, repellent film, such as would be rejected for almost any process, would not answer quite so well, unless altered by particular salting or long keeping, or perhaps both combined. As is well known, the salting influences the physical condition of the collodion considerably, and this is a matter of some importance. Some collodion I made last summer, containing 8 grains of pyroxyline to the ounce, and salted with 8 grains of bromide of calcium, is now as limpid as water, and, on coating a plate of glass with it, leaves a very thin film, and so rotten that a stream of water from the tap, not very strong, soon washes it away. This was not the case when the collodion was new.

Upon adding the proper quantity of nitrate of silver to convert it into collodio-bromide, after the usual shaking—although creamy-looking in the bottle, owing to its great fluidity—the film left on the plate was excessively thin and pale. I have since added 8 more grains of pyroxyline to the ounce (which it readily dissolved), making 16 grains, and it is now, to all appearance, in good condition. I hope to be able to make some experiments with this collodion, and report at our next meeting. On the other hand, it is known that the cadmium salts cause the collodion to become gelatinous, and this condition is clearly unsuitable.

I merely call attention to these facts to show the necessity of having a collodion with some body, and because they may be one of the sources of the complaints that have been made of inability to obtain creamy films.

It would be interesting to observe the behaviour of two different samples of collodion; one (say) containing 3 or 4 grains of cotton to the ounce, brought to the desired state as regards fluidity by cadmium, and another similar to what I have just described, containing 16 grains of cotton thinned by calcium, each with the same quantity of bromine in the salts employed. In the one collodion the atoms of pyroxyline would be in contact with double the number of the bromide, and in the other the case would be reversed. Some experiments in this direction might help to elucidate the theory advanced by Mr. Sutton respecting the influence of organic matter on the image.

In selecting bromides for the collodion great latitude is allowable, the chief requisites being that they do not alter its fluidity by keeping. I do not know a better formula than that proposed by Mr. Sayce. It is as follows:—

Bromide of cadmium	... ...	6 grains
Bromide of ammonium	... ...	2 ,,
Pyroxyline...	... ...	6 ,,
Alcohol	... ...	½ ounce
Ether	... ...	½ ,,

The solvents may be methylated if the operator do not object to the vapour. The result will not be affected in any way. This collodion keeps well, and is better after standing a month or two.

By calculation it is seen that it requires 11 grains of nitrate of silver to convert the bromides in each ounce into bromide of silver; and, to ensure a slight excess of the former salt, it is better to add from ½ to 1 grain more; 11½ grains will be found a good working quantity.

The nitrate of silver is to be pulverized very finely. Some mortars are not made with the same curve as the pestle, and with these the operation is rather tedious. A good method is to grind the bottom of a large stopper flat on the side of a grindstone, and use it as a muller on a slab of strong, coarsely-ground glass, 6 or 7 inches square. As the whole surface of the stopper is in contact with the ground glass, the nitrate of silver is readily reduced to fine powder.

In a non-actinic light add the proper number of grains of the powder to each ounce of collodion required. If in very fine powder, at the end of about two hours, with occasional shaking, all the bromide will be converted into bromide of silver, and there will be a slight excess of free silver.

A portion poured on a plate of glass leaves a creamy film similar to what is produced by using a bath. If the resulting film be not creamy, but present a thin, blue appearance, it will most probably be because all the bromide salts have not been decomposed, perhaps in consequence of the nitrate of silver not having been in sufficiently fine powder; and the remedy will be to shake for a longer time, in order that the larger particles of nitrate of silver may present fresh surfaces to be acted on by the bromide. With the collodion made as recommended, the desired condition is usually arrived at in two or three hours.

If the quantity of bromide in the collodion be not known—as, for instance, when it is bought—there need be no difficulty. The best way to proceed is to take an ounce of the collodion, and add to it a given quantity of the nitrate of silver (say 11 grains), of course in the fine powder. After the usual time, shaking at intervals, pour about 6 drops into 1½ or 2 drachms of water, stir with a glass rod, and filter through a scrap of filtering-paper into a clean glass measure. Test this for free silver by pouring in 3 or 4 drops of a solution of some bromide in water, strength about 10 grains to the ounce. This solution is used in the development of the plates, so is generally at hand.

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* Read at a meeting of the Liverpool Amateur Photographic Association, March 30, 1869.

If a slight turbidity make its appearance, the collodio-bromide may be used with confidence. If the solution remain clear, it will indicate that the bromide is still in excess, and more silver must be added, and well shaken, until, on further trial, it is found, by the turbidity, to be in excess. It will be easy, on preparing collodio-bromide again with the same collodion, to use a grain or two more silver.

Manufacturers of collodion for this process should put on the labels the quantity of nitrate of silver required to convert the bromine into bromide of silver, leaving it to the judgment of the photographer to employ what excess he thinks proper. It is a good plan for beginners in the process to test in the above manner every batch of collodio-bromide made. Indeed, there is so little trouble involved that I generally make use of it, in order that I may know when the bromide salts are neutralised, for creaminess is not a criterion.

The collodio-bromide is most sensitive when there is an excess of nitrate of silver, but it is not advisable to have this more than about 1 grain to the ounce. Good pictures have been taken when the bromide salts have been in excess, the plates being insensitive in proportion to it. A greater excess of silver than that mentioned above, whilst conferring sensitiveness, necessitates long washing and soaking in water before applying the preservative, to prevent stains. In developing, also, it would be necessary to use much bromide to prevent fogging.

As the collodio-bromide deteriorates with keeping, it is not advisable to make more than can be used at once. It gives the best results when freshly prepared. There will be little difference in it for twelve, and it will be usable for twenty-four, hours; beyond that time it is not much to be relied upon.

A recent writer on the process has recommended that a portion of each batch should be kept to use with the next, as a sort of leaven, by way of obtaining creaminess. Creaminess can be obtained without this practice, which is so opposed to the experience of the best workers that I need not further allude to it except to point out what is to be avoided.

The process is capable of endless modification by adding various substances to the collodio-bromide. There being no nitrate bath to be spoiled with any organic matter, there is plenty of scope for ardent experimenters in this direction.

When the process was new, Mr. Sayce published some experiments he made with such substances as tannin, resin, gum, and honey, in the collodio-bromide, both with and without washing. He obtained good results with the tannin, but found he could not dispense with the washing. It is true he afterwards gave it up as possessing no advantage over the ordinary process. Still, I am inclined to think improvements will yet be made by this means.

The part of the process I have briefly described is that in which it principally differs from other processes, and also that in which its chief advantages are found. These may not strike anyone, not practically acquainted with the process, as very great. A trial will, I believe, be very convincing on this point.

To be able to dispense with that source of constant trouble, the nitrate bath, is so contrary to one's photographic faith as to be, in my opinion, the main cause of the process not being more generally worked, photographers viewing with distrust such innovations.

Lastly: I should not omit to call attention to another of its recommendations, which, it will be conceded, is not slight; and that is, the certainty of every plate made with a batch of collodio-bromide being the same; so that, if out of a dozen, one upon trial turns out well, the remainder may be guaranteed.

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THE WHOLESALE PIRACY.

A few days ago Thomas Ritchey, aged 60, was again charged on remand with infringing the Copyright Act. Mrs. Mary Ellen Freer (Miss Edwards) having given evidence,

Mr. Ernest Gambart was called for the defence. He said he was a picture dealer and print publisher at 1, King Street, St. James's. He bought "My First Sermon" from Mr. Millais before it was completed. He saw it at the artist's house, and agreed to buy it when finished. It was then only an imperfect sketch. He did not commission Mr. Millais to paint it. They agreed to a price, and the exact sum was adhered to. The picture was begun in 1862, and appeared in the Royal Academy exhibition in the following year. He would not buy the copyright, as he was disgusted at the expense to which he had been put in prosecuting persons for piracy. He then contemplated giving up his publishing business on that account. The copyright was mentioned, but he declined it. He signed an agreement reserving to Mr. Millais all copyrights of pictures that he might buy. He could not tell the date of that. It was after the passing of the Act, as Mr. Millais had been advised by a solicitor what he should do to comply with it. It was not signed to cure any defects in former purchases. It was a general reservation of the copyrights of all pictures bought then and thereafter. He paid Mr. Millais for "My First Sermon" on the 28th January, 1863. He had bought pictures constantly of him, and several since that date. He bought two pictures from Mr. Faed, called "I Take this Opportunity" and "Perfectly Satisfactory." They had since been respectively called by Mr. Graves "Accepted" and "The Offer." "Accepted" represents a country girl sitting on a tea-chest and commencing a letter, "I take this Opportunity." Its size was 22 by 31¼ inches. It was bought of Mr. Faed on the 26th July, 1865, together with the copyright. It was begun in May, and was not painted on commission. There was also a replica 16½ by 23½ inches, being a free reproduction of the subject. That was commenced a week or two before the completion of the original. They were both registered as originals. The replica was paid for in February, 1866, and registered on the same day. Witness sold the larger picture and the copyright to Messrs. Moore, M'Queen, and Co. (Limited). He purchased "Perfectly Satisfactory" on the 1st of February, 1866. It represented a girl reading a letter, and being satisfied with its contents. It was sold on the same day. Witness bought all the pictures when they were mere sketches. The agreements with Mr. Faed were merely verbal. The copyright of "Perfectly Satisfactory" was included in the purchase. Its size was 22¼ by 31¼ inches. It was registered two days after its purchase. He bought the replica on the 21st of February, and registered it also as copyright. They were sold to Messrs. Moore, M'Queen, and Co. (Limited).

Mr. J. A. Spencer, a photographer, at Shepherd's Bush, proved to having photographed four of the engravings in dispute, by agreement with Mr. Graves in 1867, and to their being registered at Stationers' Hall. The negatives were in Mr. Graves's possession.

Upon that evidence Mr. Chipperfield applied for a remand, in order to produce as witnesses Mr. H. Graves, Mrs. Flatow, Mr. William Agnew, Mr. Lucas, Mr. Frith, R.A., and Sir Edwin Landseer, R.A., all of whom, as he contended, were most important to the prisoner's case.

Sir Benjamin Phillips again remanded the prisoner.

On Wednesday Mr. Chipperfield, for the defence, took several objections to the title of Mr. Graves to the copyrights, viz., that his proprietorship was not sufficiently proved by a certified copy of the entry of the last assignment being produced; that photographs of engravings taken from paintings were not original; that sufficient descriptions of the works had not been entered; that the copyright was not created at the time of the first sale; that the copyrights, if created, were never assigned to the complainant; that the correct dates of the agreements were not given at registration, nor the names of the parties correctly inserted; that the painting "The Railway Station" was sold before the Act of 1862; and that a registry of "The Last Kiss," in May, 1865, displaced that of the prosecutor in August. He cited judgment of Mr. Justice Blackburn in a similar case, to show that minute descriptions of paintings should be registered, and contended that that clearly did not apply to the vague titles of "The Piper and Pair of Nutcrackers," "The Last Kiss," "The Offer," and "Accepted." The decision of Mr. Justice Blackburn had reference only to the title "A Distinguished Member of the Humane Society," but he specially cited the instance of "The Piper and Pair of Nutcrackers" in his judgment. He argued, in conclusion, that the copyrights were not in the slightest degree exclusively the property of Mr. Graves, and that the prisoner had not made himself liable to the penalties of the Act.

Mr. Lewis, in reply, said the objections of Mr. Chipperfield had been decided against in nearly every police court, and that no excuse could be offered for the prisoner, who had deliberately and systematically pirated engravings on which the name of Mr. Graves appeared as the copyright owner. It was one of the worse cases he had ever prosecuted, and he (Mr. Lewis) hoped an example would be made of the prisoner. The question as to the copyright of photographs was dealt with in all the Acts of Parliament on the subject since the reign of George III., and he thought it unnecessary to further contest matter which was so abundantly clear.

Sir Benjamin Phillips said the defendant was charged under the Act 24 and 25 Victoria, for selling unauthorised copies of copyright engravings, and there were, in all, thirty-one cases against him. No case had received graver attention on his part, and, after duly considering all the circumstances, he was of opinion that Mr. Graves was by law entitled to the copyright in his pictures and photographs. In 1862 a wise and just law was passed to protect artists, a class of men who were eminently and legitimately entitled to such protection, and it was monstrous and absurd to allow quibbles to override the true spirit of the Act. An important question arose as to whether photographs under those peculiar circumstances were original. He had come to the conclusion that the Act was quite clear upon the subject, and that within its meaning photographs could be original. Photography was a beautiful and interesting art when confined to its legitimate range, but if it was to take the place of valuable labour, and labour spread over years, as described in this case, its introduction would be most fatal to the interests of a most meretorious class. It required no great ability in its exercise, and therefore could not be allowed to displace the great power and remarkable ability of the class of artists. Mr. Graves had substantially proved his right, and he (Sir Benjamin Phillips) ordered the prisoner to pay £5 in each of the thirty-one cases, £155 in all, with the alternative of two months imprisonment in the first case, and seven days on each of the others. The pirated photographs would be destroyed.

The prisoner did not pay the fines, and was taken to Holloway Goal.

UNIFORMITY IN THE FLANGES OF PHOTOGRAPHIC OBJECTIVES.

BY M. CAREY LEA.[*]

I wish to propose to the makers of photographic objectives a great and much needed reform—one that has been completely and satisfactorily accomplished in the manufacture of microscopic objectives, and which should at once be extended further.

With the continued efforts and eager rivalry of opticians, not a year now passes without the introduction of one or more new lenses; and, as photographers want to have the best instruments they can, these new lenses are extensively purchased. It follows that a great accumulation of objective flanges takes place, and of camera-fronts to carry them.

One English maker, Mr. Dallmeyer, has adopted the very convenient system of using but a very small number of flanges, so that a great many different lenses by him will screw into one and the same flange. For example: the 10-inch wide-angle view, the 12-inch triplet, the 14-inch rapid rectilinear—all these I find to screw into the same flange, as also does the 8½-inch wide-angle view, and probably various other lenses. This is a good example, and worthy of an extended imitation. I do not mean merely to suggest that each maker should make his lenses of various sorts to screw into the same flange, but that certain gauges should be adopted all the world over. This has already been done with microscopic objectives. If one owns an American microscope, and purchases a new objective from London, or Munich, or Vienna, or Paris, as a matter of course it screws at once into its place: the gauge has been fixed, and all makers conform to it. If any one undertook to disregard the custom, his lenses would thereby be discredited.

In photography it would not be possible to have one only gauge. One gauge would be proper for short-focus lenses and stereos up to 6 or 7 inches focal length; another would be suitable for all lenses of medium sizes, such as would be used for views on 4-4 and 8 by 10 plates; and then a larger size for extra large tubes. The convenience of this arrangement would be very great. In working, for example, with 4-4 and 8 by 10 plates, one camera-front and one flange only would be necessary, no matter how many lenses be possessed by the photographer. I do not think that opticians appreciate the annoyance of the present state of things. As it is impossible to be screwing on and off of flanges, a different camera-front must be kept for every lens in use, and these must be always at hand. If, in going out to take views, it is intended to use several lenses of different focal lengths (and one who carries but one lens or two is almost certain to find unexpected and particular need for one that has been left at home), then a camera front must be taken for each lens. The lenses themselves are heavy enough, and troublesome enough to carry, without the additional weight and trouble of a front besides.

As Dallmeyer has set the example of uniformity in this respect, his gauges might be adopted. This is, however, less important than that some one series of dimension should become universal. It is to be hoped that no jealousies of makers will interfere with this so much needed reform.

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[*] *Philadelphia Photographer.*

Correspondence.

THE NEW PHOTO-CRAYONS.

Sir,—There is one sentence in the letter from Mr. S. Fry, contained in your issue of last week, that especially deserves the attention of professional photographers. Speaking of the Sarony pictures, Mr. Fry says:—"It is very satisfactory to find that in order to produce the best results a great deal of care and skill are required."

Notwithstanding the pecuniary results of the mania for cartes-de-visite, the ease with which they have been produced has no doubt tended to retard the true progress of the art, until in every town, and almost in every village, artists are to be found whose thoughts never range beyond the production of mediocre portraits, and occasionally a landscape that would give Mr. Bedford or England a fit of indigestion to behold.

The effort to introduce a higher class of picture, such as the "photo-crayon," deserves our hearty support, if for this reason only, that this class of work can only be produced by men whose practical ability will thus be recognized, and their efforts to produce photographs meet with deserved success. The manipulative skill that barely sufficed for quarter-plate negatives, and the "taste" that delights in scenic backgrounds and accessories, will be found useless when contending with the niceties of a delicate 12 by 10 transparency.

I suppose we shall always have two classes of photographers, but it is eminently to be desired that a distinction should be created between those who "can" and those who "cannot." This is promised by Mr. Sarony, and our attention is well drawn to it by Mr Fry.—I remain, yours truly,

Northampton, April 3rd, 1869. H. C.

HYPO FOR FIXING NEGATIVES.

Dear Sir,—I had hoped to have seen some notice taken of a letter by "An Amateur," in your issue of Photographic News for March 19th, 1869, respecting the ill effects of hyposulphite of soda as the cause of cracked negatives. If the opinion of your correspondent be that of others also, it should, I think, be made more generally known through the medium of your valuable periodical. If on the contrary, it then is still more imperative that it be at least questioned, seeing that otherwise it may induce others to forsake the innocuous hypo for the use of the insidious poison of cyanide of potass, the ill—I had almost said deadly—effects of which have been but too general of late.

The perusal of the above-named letter led me, with a trembling hand, to examine my earlier stock of negatives taken several years since, and fixed with hypo, which, to my great joy, I found to be all uninjured, and as perfect as when first taken.

My experience as an amateur is, of course, rather a limited one, and therefore, if there really be any doubt respecting the safe use of hyposulphite of soda in fixing negatives, I hope that some professional photographer of larger experience will favour us with his opinion also, so that we may more surely know whether the continuance of hypo-cleaning be safe or otherwise, as far as the permanence of its negatives may be depended on.

I have no doubt that cracked negatives do occasionally occur after the use of hypo, not arising from anything inherent in the salt itself, but wholly from the chemicals not being thoroughly and carefully washed out from the finished plates.

It is but fair to "An Amateur" to state that I have always been very particular in the final washing of my negatives, finishing with water at nearly a boiling temperature. I am, dear sir, yours very sincerely, Henry H. Hele.

Teignmouth, Devonshire, April 3rd, 1869.

[We shall be glad to receive further experiences in this matter.—Ed.]

THE NEW DIRECT CARBON PROCESS.

Dear Sir,—In my last I said I believed I could send you particulars for your next issue. All, however, that my friend deems it wise to communicate at present is, that the pictures are printed directly; that there is no transferring necessary; they are as easily printed as if done in silver, and in about the same time; any tone or colour is obtainable at the will of the workman; they are in, and not on, the paper, like other carbon methods, which are transferred; lastly, I believe the papers will be sold to photographers with instructions, which will be simple in their nature; and that the paper will keep sensitive for any time.

Some of us remember having to make our own albuminized paper. Time and demand have changed all that. I trust we are on the eve of a time when a good carbonized paper will be sold ready for the press.—I am, yours truly,

John Beattie.

2, *Westbourne Place, Clifton, Bristol, April 6th*, 1869.

[As our readers are disappointed in their hope of receiving the details which Mr. Beattie kindly endeavoured to obtain for them, we may mention the kind of suggestion which the print itself presents as to the possible mode of producing it. It is taken, apparently, on albuminized paper, the lights being glazed, and the shadows dull, almost as if the blacks had been applied in powder. If we were experimenting to produce such a result, we should float albuminized paper on a solution of bichromate, expose, and then treat with an alcoholic solution of lampblack or other pigment, which would probably adhere in due gradation, as the vitreous powder adheres to the similar surface in the enamel process. Here is a possible process, and one by which the specimen sent might, from its appearance, be produced.—Ed.]

A TENT ON WHEELS.

Dear Sir,—I see, in your last week's edition of the News, a correspondent, signing himself "C. W. H.," would like to have a description of a photographic tent on wheels, ready for use. I have made one myself, except the wheels and carriage part. The first tent I used was made out of a wheelbarrow, and very well it answered, the only drawback being that it wanted so much fitting; so I thought I would make one on four wheels with springs, and as complete as possible. The dimensions are, 4 feet in length, 2 feet 4 inches in width, and 2 feet 9 inches in height, with door at back. Mine is made out of one-inch pine. To make one lighter, I would recommend it to be made of pine, panelled, the panels to be of millboard, or half-inch pine. It must be very dry, well-seasoned stuff, without any joints, if it can be so made—that is, with panels. My top lifts up with jointed irons to about 5 feet 9 inches. As that depends upon the height of the person, the top should be a piece of floor-cloth in one piece on ribs. You may liken it to a baker's barrow on four wheels, with handle to draw it about. I was obliged to confine myself to width in making mine. I would recommend the axle-trees to be cranked, as then it would not be so high.

I have a tin cistern inside, which will hold four or five gallons of water. Under the cistern is a platform containing sink. On the opposite side is the bath, which stands on the table when in use; when done with, a rack receives it in the side of the carriage, on the opposite side of cistern. The shelf contains all the chemicals, fitted in holes, to keep them steady. On the left hand side, at bottom, are the plate-boxes; a fixture containing three different sizes; a plate-drawer is fixed on the opposite side; a seat, to turn up, is fixed at a convenient distance from the platform, so that the operator may sit down without any trouble; a window in front completes the carriage. The window must be of the same size as the largest plate to be worked, and made to slide, so as to get ventilation; holes through the bottom will keep a thorough draught, and, with a little ingenuity, can be made to keep out the light. I find a double thickness of twill lining quite sufficient for the cover. Underneath I have four legs, one at each angle. When not in use they strap up out of the way; they are to keep it steady, and to take the extra weight off the springs; when in operation, the camera, tripod, and all belongings, will go at the bottom. The compactness of it is very great. The glass window is varnished with Aldis's varnish, four coats.

I have travelled about a great deal last summer with it. I always carry water with me. When I want to operate, I let down the legs, block the wheels with a stone, lift up the top, and fit up camera, in about two or three minutes. The price I cannot say for certain, as my iron work was done by the country blacksmith and wheeler. I have no doubt that in London it could be made for about £10 or £12. I will send you a photograph of it closed as soon as I can get one. If "C. W. H." is in the neighbourhood of Ashtead, I shall be most happy to show it to him, or any other gentleman, as it is not hampered with a patent. I have received benefit from the gentlemen belonging to your staff, and if my mite will be of any use to the public, they are welcome to it. I always carry a small lamp with me to dry the plates. I forget the name of it, but it burns the benzoline contained in a sponge inside, as there is no fear of it turning over and spilling the contents.—I remain, yours truly,

Ashtead, near Epsom, April 6th, 1869. R. Huck.

PS.—I forgot to mention that the springs are what the trade term the nutcracker spring. The largest plates I work are 8½ by 6½, but I could work up to a much larger size with a larger sink. The waste-pipe is made out of a piece of india-rubber tubing, carried out through the bottom in a crooked way. The window in front is protected from the outside by a shutter lifting up and down by hinges. The tin cistern takes in and out with turn buckle irons.

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 5th ultimo, M. Balard, President, in the chair.

The receipt of a Dutch photographic journal published in Amsterdam was announced; it was likewise mentioned that the *Societe Neerlandaise* had resolved to institute a photographic exhibition this year at Groningue, to open in the month of July.

M. Valette described an apparatus he had constructed for operating with the wet process in the open air. The apparatus consisted of two portions, the upper one containing the lens, dark slide, collodion-pourer, funnel, &c.; and the lower one, the glass plates, baths, bottles, sensitizing bath, and fixing agent. In operating, the four baths, with which the apparatus is furnished, are used in succession, one containing silver, another the developer, a third water, and a fourth cyanide of potassium; the same funnel is used for all four liquids, commencing with the silver. M. Valette explained the *modus operandi*, and stated that he made no claim as to novelty, but merely wished to exhibit the compactness of his invention.

M. Chardon made some observations on the employment of carbonate of silver paper. He said the advantages accruing from its use were twofold: 1, the prepared paper might be preserved for a lengthened period before employment, and the unfinished prints were also capable of being kept for the space of a fortnight before being toned and fixed, thus allowing of an economical use of the toning bath by treating a great number of pictures at one time; 2, the paper might be toned easily in any ordinary bath with the same facility as chloride of silver paper, and might also be as rapidly printed as the latter. The above advantages were important ones, especially in summer, when sensitized paper soon became yellow; but, on the other hand, the use of carbonate paper presented several drawbacks.

To produce the prints, it was indispensable to expose the cushions of the pressure-frames for a considerable time to the action of ammoniacal vapour, and these vapours might prove the cause of several accidents. In the first place, if sufficient ammonia had not accumulated in the padding, the print failed to appear, and the paper assumed a rose tint; in the second place, if sufficient ammonia were present, but the light not sufficiently strong, as it happens sometimes in winter, the same result would be obtained, so that a hard negative, which fails to yield a print in the course of a day, was almost useless, as the ammonia would not fail to evaporate into the surrounding atmosphere when a lengthened period of exposure was requisite. From this, therefore, might be concluded that without the presence of a large quantity of ammonia and a strong light it is impossible to obtain good results with somewhat opaque negatives.

The process presented, however, a still greater drawback: it was well known with what facility alkalies decompose the resins, and this same reaction would materially injure the varnish protecting the negative. After repeated employment of the carbonate paper with the same negative, the latter has been found to be completely ruined by the action of the ammonia upon the varnish, which assumes an intense yellowish tint, rendering further printing impossible. Another point must also be mentioned. If, after employing the carbonate of silver printing process, it was desired to use chloride of silver paper, it became necessary not only to air the negatives thoroughly, and to change the pads, but likewise to employ different frames, as otherwise the paper assumed a dark yellowish tone, and repelled the action of the toning bath.

M. Schaeffner, in reply to M. Chardon, stated that not one single instance of the inconveniences mentioned by that gentleman had been experienced during the thirteen months during which the carbonate of silver process had been employed, nor during the five months that it had been in the market commercially. M. Chardon's attack was directed not against the carbonate of silver paper itself, so much as against the fumigation with ammonia, for the carbonate, being an insoluble salt, was incapable of affecting in any way either the negative or the varnish. In regard to the question of the ammonia, M. Schaeffner said that one of the principal conditions of success was the employment of that material in abundance; and if failures happened from the employment of an insufficient quantity, the operator was responsible for the same, for not obeying the instructions. He further stated that he had never found it necessary to keep a negative in the frame longer than a day in order to obtain a print upon carbonate paper, but if such an instance were to occur, the same would be an isolated one, nor would it be aggravated by using this particular process. As to the employment of ammonia vapour for accelerating the creation of the image, the operation is by no means novel, but has been frequently used without in any way injuring the varnish in the manner indicated by M. Chardon; and if a case had arisen in which the varnish became yellow, the change was due to a series of causes, which it would be undesirable to enter into on that occasion. With regard to the necessity of changing the frames, &c., when ceasing to employ the carbonate of silver process, the experience of M. Chardon was quite the reverse of M. Schaeffner's. In conclusion, M. Schaeffner stated that the drawbacks experienced by M. Chardon were totally unknown to the large body of photographers who had worked the process according to the regular instructions.

M. Davanne stated that perhaps M. Chardon employed a varnish of benzoin; a shellac varnish might be placed in contact with liquid ammonia for the space of eight hours without becoming injured.

M. Davanne made some remarks upon the recent simplifications of the carbon process, communicated by M. Jeanrenaud. He said:—"A mode of operating, perfectly similar, has just been described in England, by Mr. Blair; it was published in France several days after the communication of M. Jeanrenaud, but the details and formulæ have not yet been given. The process is founded upon the employment of coagulated albumen, proposed a year ago by M. Marion, who has generously abandoned his patent. On seeing this communication from England, I deemed it right to claim for M. Marion the priority of employing albuminized paper, and to state what is already known to several members of the Society, viz., that M. Jeanrenaud made, we may say in public, the same experiments as Mr. Blair, with this sole difference, that where the latter used wood spirit, the former employed spirits of wine, to effect the coagulation. We believe that the two experimentalists pursued the same line of research, and arrived at the same goal, in ignorance of one another's investigations, and this statement we deem it right to make to the Society in fairness to both parties concerned."

In the name of the Committee of Administration, M. Davanne stated that all recent innovations made respecting the carbon process had been undertaken with a view of doing away with the necessity of a double transport, and likewise to obviate the use of a solution of caoutchouc in benzole or other disagreeable compounds. To do away with the double transport there appeared to be but one method, viz., to employ a reversed negative. Owing to the transition state of our positive processes at present, it would be inconvenient to take negatives reversed, as they could then be used in no other process; but it would be preferable, theoretically, if a negative could be produced capable of being used either in a reversed manner for carbon printing, or in the usual way for silver printing. In order to encourage the prosecution of research in this direction, the Committee propose to award in April, 1870, a silver medal, made according to the large model adopted by the Society, for the best *non-patented* process for obtaining or transporting *cliches* upon a pellicle presenting, if possible, the following advantages:—It should be sufficiently thin to be capable of yielding a clear image from both sides, sufficiently solid for ordinary use and for a prolonged period, unalterable by the action of the atmosphere or continued heat of the sun, or by light; and while insisting on this point, it should be remembered that the solutions of rubber hitherto proposed have generally possessed the inconvenience of becoming darkly coloured by the action of light. The surface, like a varnished negative, should be capable of supporting, without staining, contact with dry nitrate of silver; and, finally, the material should be capable of application to all descriptions of wet or dry collodion plates, collodio-albumen, tannin, and varnished negatives; in the latter instance a good method should be stated for removing the varnish. The intention of the Committee was that the medal should be given in addition to the annual prizes, and that all published processes should be allowed to compete with proposed novelties.

M. Fierlants read a communication on a method for preventing deformation in the production of the photographic image.

M. Despaquis announced an improvement in transporting the carbon image, by employing gelatine in the place of albumen.

The proceedings then terminated.

Talk in the Studio.

Photographic Society of London.—At the next meeting of the Photographic Society Mr. E. O. Brown, F.C.S., of the Royal Arsenal, Woolwich, will read a paper on the Manufacture, Properties, and Application of Gun-cotton. Although the paper will, it is probable, treat chiefly of gun-cotton as an explosive agent, it cannot fail to present many points of interest to the photographer. Mr. Solomon will also bring before the meeting many examples of printing on the Obernetter application of our collodio-chloride of silver to the production of paper prints.

Mr. Sarony's Photo-Crayon Portraits.—The hatched vignette designs for these portraits which we have seen until within the last few days have been all drawn by hand. We have now seen proofs of the lithographed designs by Mr. Napoleon Sarony, which are exceedingly delicate, and perfect in execution. We have received also the simple enlarging apparatus used by Mr. Sarony, and which, as he states, may be made for 20s., but are compelled to keep over a description of it until our next.

Gum-Gallic Dry Plates.—In a recent answer to correspondents we told a reader that it was possible, at times, to take great liberties with these plates, and yet secure good results A correspondent this week sends us an excellent print illustrative of a very interesting narrative of what may at times be done with those plates. He says:—"About five months ago I made a dozen of these plates, and put by six in three dark-slides (double). The other six I exposed and developed very satisfactorily. Well, I did not have an opportunity for exposing the other six until about five days ago. I forgot to say how these twelve plates were prepared. I had no distilled water, and therefore had to use hard water, which I thought would do well enough for washing, &c., as they were only for trial plates, to be exposed and developed the day after preparing. I used no backing, and altogether, I am sorry to add, prepared them in a very careless manner. As I was saying, I developed the first six all right, and these told me I was to stick to the process. About five days ago I remembered the remaining six in the double backs. I had made and developed several since, though I had never used them more than a week or two old. The day was wet and dark, and I went to them, and looked at them, and found they looked all right, and exposed four of them. To-day (Saturday), not having anything particular to do, I thought I would develop them, hardly expecting to find the ghost of an image on any one of them. I had exposed all for a very short time, considering the dark day and dark subject. I enclose one of the prints from one of the four negatives, all of which came out equally clear, and free from fog or marking of any sort. I tried a wet plate on the same subject directly afterwards, and could not get out any details in the trees at all. I do not send this as a good print from a good negative, but simply to show how clear gum negatives come out, even when prepared badly, and not washed properly, and exposed on dark objects. The enclosed had an exposure of sixty-eight seconds, 3-16ths stop, single landscape lens, 7 inches focus. Wet plate—same subject, same time, stop, &c., fifty seconds, not such a good negative." Our correspondent adds—and we, of course, enforce—that this is not intended as an incentive to carelessness, but to show the peculiar qualities of the process. The utmost care should always be used with dry plates, as much depends on it.

A Rogues' Gallery.—There is a photographic album at Scotland Yard, in which may be seen the photograph of every ticket-of-leave man in the country.

A Victim.—The Paris correspondent of a daily contemporary says:—"A distinguished visitor has been doing Paris, and leaves to-day or to-morrow for London. I allude to the Nawab of Bengal. This distinguished Oriental has during his stay proved a small fortune to the penny-a-liners. One gentleman beat him up, and drew a pen-and-ink portrait of him for *Figaro*. Another astounded the *Gaulois* with the remarkable fact that he wore spectacles. The illustrated papers have taken his likeness. The first day he arrived he received a couple of hundred begging letters; and an army of photographers and corn-cutters laid siege to the Grand Hotel in the hope of obtaining his custom."

To Correspondents.

T. K.—The tissue used in Mr. Johnson's process is Swan's patent carbon tissue, which will, we believe, be supplied by the Autotype Company. We presume that they will make due announcement of the matter when they are ready to offer the process to the ublic. At present we know nothing more of the matter than we stated in our article. Mr. Johnson will enter more fully into the matter, doubtless, when he brings it before the Society in May.

C. E. F.—Both the lenses you name will give you straight lines; but that marked B in your letter is very much the more rapid of the two.

Oxygen.—We believe a letter addressed to M. Tessie du Motay, at Metz, in France, will find him.

A Birmingham Lad.—You would be infringing the copyright of the proprietors if you reproduced and sold copies of the cartoons in *Punch* without permission. Your best plan will be to apply to the publishers, Messrs. Bradbury and Evans, for permission.

J. C. B.—The carbonate of silver paper is sold by Messrs. Harvey and Reynolds, of Leeds. The price per quire we do not remember. A sample sheet, with instructions, is furnished for twelve stamps. 2. A boiler of tin and worm of lead (or, rather, of the white amalgam used for gas pipes) will answer well for distilling water. 3. Tannin is best fresh mixed; old, decomposed solution is not safe. 4. We have no definite information as to the inns in the Trossachs, or how far they are well affected to photographers.

J. A.—The crystals in your bath are probably acetate of silver; but after the course of treatment you describe, it is somewhat difficult to say what you have present. The great difficulty of dealing with what is termed "common water" is, that it is a very uncertain article, and you have no means of knowing that any two samples are the same. The ordinary traces of chloride and carbonate of lime in "common water" would rarely be of serious detriment to photographic use, as they could easily be got rid of; but you are never certain of what else may be present. The safest and simplest plan would have been to have neutralized with carbonate of soda, and then sunned the solution very thoroughly, giving, at least, an exposure of a week or two with the present weather. Then, if acid were required, add nitric acid; but avoid acetic acid by all means, as it makes the bath unstable. When once added, it is very difficult to eliminate, boiling down to dryness being the only safe method. Prolonged sunning will reduce acetate of silver, and aid in eliminating it in this way. Whenever you are going to experiment on a bath, take a small portion of it—say 10 ounces; that will be quite sufficient to try the effect of uncertain remedies. Your best course now will be either to boil down, or neutralize and sun thoroughly.

W. J. A. G.—Of the three papers you name, the Obernetter collodio-chloride paper will probably answer your purpose best. The Carrier paper is simple and easy to use, and gives good results, but the images lack vigour, except with intense negatives. The carbonate of silver paper gives very good results, but for testing negatives whilst on a tour the fuming is very troublesome. The Obernetter paper gives exquisitely perfect results, without other drawback than the necessity of a little care in manipulation. Mr. Solomon, of Red Lion Square, is agent, and will supply it. The print you enclose is very excellent, although possessing the characteristic lack of vigour of the Carrier paper, clearly in no wise due to the negative. The narrative of your results with gum plates, after taking such liberties with them, is very interesting.

Sel d'Or.—You may prepare double chloride of gold and sodium by adding the equivalent proportion of chloride of sodium to a solution of chloride of gold, and then evaporating to dryness. As the chief object of using it is to get a salt quite free from hydrochloric acid, the mere addition of chloride of sodium to a solution of chloride of gold, without evaporation to get rid of the acid, scarcely answers much purpose. Add 1 grain of chloride of sodium to 5 grains of chloride of gold.

Landscape Amateur will find an account in our Correspondence column of a perambulating tent, with the details he requires. Should this not serve his purpose, we will endeavour to give or obtain him further information.

B. Atkins.—There is no list or catalogue of copyright engravings. We do not know anything of any paintings by the person you name, nor can we tell you to whom to apply for information. If they are very old paintings, as you state, it is probable that you may photograph them without risk of infringing any copyright.

Hypo.—Thanks. The portrait illustrates that the lens answers well for cabinets. Is it sufficiently rapid?

Several Correspondents in our next.

Photographs Registered.

Mr. S. Hoggard, Redcar,
  Two Photographic Groups of Revs. Kirk, Brown, Austin.
  One Photograph of Cotham Grammar School.
Mr. Archer Clarke, Stourbridge,
  Photographic Group of Miners of Brierley Hill.
Mr. T. Wilson, Ashton-under-Line,
  Two Photographs of T. W. Mellor, Esq., M.P.
Mr. G. Stuckey, Dorchester,
  Photograph of Rev. W. Barnes.
Mr. W. Watson, Southport,
  Photograph of "Lobelia."
  Photograph of "Master McGrath.

THE PHOTOGRAPHIC NEWS.

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COMPARATIVE TRIAL OF DRY PLATES.

We have recently had an opportunity of witnessing an interesting competitive trial of some of the most popular forms of dry plates, the aim being to do to all the fullest justice, submitting each to its own best treatment. The trial took place on Monday morning last, a bright, warm, sunny morning, with a slight trace, however, of yellowness in the atmosphere. The trial took place in the garden of Mr. Russell Manners Gordon, at St. John's Wood, Mr. Gordon and several distinguished dry-plate photographers taking part in the experiments. The subject chosen was a severe test, containing a light-coloured building in full sunshine, with a portion of it covered with ivy in deep shadow. It will readily be seen that to secure detail in the dark green ivy in shade and in the light drab-coloured building in sunshine was no easy thing to secure on dry plates.

A twin lens camera with a pair of rectilinear lenses was employed. The exposures were made about noon. A wet plate, with collodion and chemicals in very fine condition, was first exposed, in order to secure a satisfactory standard of comparison. The time given to this was ten seconds, but it was scarcely sufficient, and it was agreed on all hands that the standard exposure for a wet plate yielding the most perfect results should be regarded as fifteen seconds.

The following plates were then exposed for the periods mentioned:—

1. A gum-gallic plate, prepared by Mr. Gordon. This received thirty seconds.
2. One of Dr. Hill Norris's extra-sensitive plates, stated to be equal to wet collodion. This received fifteen seconds.
3. A gum-gallic plate, prepared by Mr. Whiting. One-half was exposed twenty-five seconds, the other half one minute.
4. A plate prepared by Mr. England, by a process which will be described in our pages, if, after further trial, it is found as good as its present promise, thirty seconds.
5. A collodio-albumen plate, which had received a final wash of gallic acid solution. This was exposed one minute.
6. A Liverpool dry plate, exposed thirty seconds, and another exposed a minute.

Several very good negatives were obtained from these exposures. In point of rapidity the Hill Norris sensitive plate took the first position. Developed with iron and silver according to instructions, it rapidly came out, and yielded a fine detailed, soft, and bright negative; some slight defects in the film, which might have been avoided by more careful manipulation in preparing the plate, excepted, the negative might have been pronounced perfect. It had the peculiar bloom, and greenish tint by reflected light, and slight ruby tint by transmitted light, which used to characterise a pyrogallic negative with everything in good condition.

Next in point of sensitiveness came the gum-gallic plates and Mr. England's plate. The latter was developed with iron and silver, and intensified with pyro and silver. It was somewhat slower than some of the plates in development, but not decidedly slow. In result it was exceedingly perfect, very brilliant and clear, and, at the same time, delicate and soft. Mr. Gordon's gum-gallic plate, prepared exactly as we have before described, developed with gelatino-iron and silver, and intensified with the same materials used in modified proportions, gave an exceedingly perfect negative, which it would be very difficult indeed to distinguish from one taken on wet collodion. Mr. Whiting's gum-gallic plate was developed with iron and silver, each half being treated in development in precisely the same manner, notwithstanding the difference in exposure. In the finished result the difference between the two halves was singularly slight, and when one was treated with a little pyro and silver, the difference was scarcely appreciable, both negatives being exceedingly good.

The Liverpool plates, from some little uncertainty in the strength of the solutions, especially the ammonia, scarcely fared so fortunately, and did not receive full justice. That which received thirty seconds started out, when the developer of pyro and ammonia was first applied, with such rapidity that it was deemed desirable to add a little bromide. This checked the development almost entirely, and on attempting to push it to bring out the image properly, the plate became veiled. A second plate, having been exposed for a minute, was developed with pyro and ammonia only, without bromide. This, probably from the uncertainty to which we have referred, became veiled also. It acquired great intensity, however, and, but for some lack of detail, would have furnished a printing negative. As these plates did not yield on this occasion, such good results as we have obtained and seen before, we hold the trial as practically *nil* regarding them.

The collodio-albumen plate was developed with alkaline pyro, according to the method described by Mr. Gordon in our Year-Book for 1868. The development was slow, and the exposure was clearly insufficient; but, so far as the image came out, it gave promise of very good qualities.

Mr. Gordon's gum-gallic plates were prepared with Mawson's collodion, with the addition of two grains of bromide of cadmium to each ounce, which answered perfectly for the process. Mr. Whiting's plates were prepared with Mr. Fry's collodion, which also answered exceedingly well; possibly the addition of more bromide would for these dry plates have been an improvement. Mr. Gordon's plates had received a preliminary coating of 1 grain of india-rubber in an ounce of kerosolene, which answered well as a preparatory film, to prevent risk of losing the negative film. Before development the plate received an edging of a similar solution made thicker.

The development in each successful case was rapid and satisfactory. The Hill Norris plate developed as quickly as wet collodion; the gum-gallic plates nearly as quickly as wet collodion, but not quite; and Mr. England's a trifle slower still. All the films adhered well, and, except in one or two unimportant instances, there was no tendency to blistering.

The gum-gallic plates were backed with a coating of burnt sienna, to prevent "blurring," which it did effectually. The Hill Norris plate was backed with a piece of black paper in optical contact, which, however, scarcely served to prevent blurring entirely. Mr. England's plate had a very creamy opaque film, which gave but little trace of blurring, without any backing; and this trace of blurring simply served to give additional softness and harmony to the otherwise spotty effect of light reflected from ivy leaves.

With the exception of the collodio-albumen plate and the gum-gallic plates, the mode of preparation is unknown to us; but the gum-gallic plates leave little to desire. The collodio-albumen, it is true, is exceedingly safe, and, when treated with a final wash of gallic acid, will keep nearly indefinitely. Mr. Gordon has developed one perfectly which had been prepared twelve months; and we have seen good negatives from collodio-albumen plates which had been kept in India twelve months. With the wash of gallic acid, the alkaline pyro may be used for development safely, and the exposure, therefore, much shortened. But, highly as we think of the collodio-albumen, we are bound to give the palm of simplicity, rapidity, and excellence, with equal certainty and keeping qualities, to the gum, which appears to leave nothing to desire.

Later in the afternoon, Mr. Gordon tried a group in shade, the setting sun being behind the figures. With a pair of stereoscopic double combinations, sufficiently stopped down to define the group well, an exposure of twenty-five seconds was given, and a good negative obtained, which would, however, probably have been better for five seconds more. For a wet plate scarcely a less exposure would have been given. The elasticity of the exposure is one peculiarity of this process. Mr. Gordon finds, as a rule, that an exposure twice as long as ordinary wet collodion is sufficient; by care and patience a negative may be obtained with the same exposure as wet collodion, whilst three, or four, or six times the exposure ot wet collodion will not ruin the negative if the development be properly managed. We hope shortly to be able to say more as to the preparation of Mr. England's new plates, the negative by which was, perhaps, the finest produced on this occasion.

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THE "LEGITIMATE RANGE" OF PHOTOGRAPHY.

In the recent case of wholesale piracy heard at the Mansion House, Sir Benjamin Philips, as reported in the daily press, accompanied his decision by some remarks, which, if they are to be taken as forming part of the basis of that decision, are not a little singular. "Photography was," he said, "a beautiful and interesting art when confined to its legitimate range, but if it was to take the place of valuable labour, and labour spread over years, as described in this case, its introduction would be most fatal to the interests of a most meritorious class. It required no great ability in its exercise, *and therefore* could not be allowed to displace the great power and remarkable ability of the class of artists"!

We venture to believe that a more absurd *non sequitur* has not often been uttered. Because a process is easy, *therefore* it shall not take the place of a process which is complex; because a method of producing a given result is short and simple, *therefore* it shall not take the place of a method which is tedious, protracted, and requiring great skill! But the illogical character of the remarks is not their only or worse fault. Photography is "beautiful and interesting when it is confined to its legitimate range" (which, by the way, is not defined), but it is not to take the place of "valuable labour," or to interfere with the "interests of a most meritorious class." Here is the express spirit of the old practice of loom-breaking, of the modern spirit of "rattening," of the opponents of labour-saving improvements in all times. The art of the engineer or machinist would doubtless be held as beautiful and interesting by the obtusest labourer; but when that art introduced power-looms to supersede hand labour, it was "fatal to the interests of a most meritorious class," and that meritorious class considered that it was to be incontinently put down by destroying the looms. When that art supersedes the hand-labour of the Sheffield workman, it is fatal to his interests, and must be put down, he considers, by various processes of rattening. In short, there is not a single great improvement which has been introduced by the advancement of science which has not interfered with the interests of some meritorious class, and which would not, therefore, if the dictum of Sir Benjamin Philips were held good, be restrained as exceeding its legitimate range.

Our daily contemporary, the *Standard*, in an article which we reproduce on another page, takes, in a modified form, the same position, and states that "photography is assuming the place hitherto held by a more legitimate art." Undoubtedly: precisely in the same way in which the steam power and gigantic Hoe, by which the *Standard* is now printed, has assumed the place at one time held by the "legitimate" old wooden press. The truth is that photography is just as legitimate as the art of the painter or engraver; but in piracy it is not used in a legitimate manner. Not only is the piracy dishonest, but it is especially provokingly so, because in piracy it does not attempt to supersede the engraver by copying the painting, but it steps in when he has done his laborious and costly work, copies that which he has made easy to copy, and proceeds, if possible, to render his work unremunerative by the surreptitious sale of illegitimate copies. *Hinc illæ lachrymæ.* But let the matter be fairly dealt with. It is the dishonest use of honest agency, the illegitimate use of a legitimate art, which is to be condemned. By placing the matter on a false issue much harm is done, and the cause of piracy, being regarded as the cause of photography, will acquire sympathy in quarters where it should be utterly condemned.

We must not be supposed for one moment as disputing the rectitude of the decision of Sir Benjamin Philips for its own sake; we simply condemn the illogical and dangerous remarks with which it was accompanied. and which are apparently offered as amongst the reasons for the decision. We presume that the infractions of the law were definitely proved, and the penalty legitimately imposed, and we rejoice at all times when those who degrade a beautiful art by using it for dishonest purposes are checked by the strong hand of the law. But it is not because the reproduction of paintings is beyond the legitimate range of photography; not because it can produce in a few hours transcripts of pictures which would cost the skilled engraver the labour of years; not because it is superseding, to some extent, the beautiful art of engraving, that photography is to be restrained by the minister of law, but simply because—or, rather, when—it is employed to rob an artist or a publisher of that which he has produced, or that which he has purchased. The more beautiful the art, the more facile and perfect its power of reproduction, the more carefully it should be held in check by the law; and the more carefully guarded by the law should be the property of those who can be so easily and so offensively despoiled by it.

Having once more entered our protest against piracy as a very odious form of dishonesty, degrading a noble art and bringing a general stigma upon all connected with it, as well as robbing, in a sneaking and cowardly manner, artists and publishers, we once more express our regret that artists and publishers do not boldly and systematically avail themselves of photography as a means of popularizing their pictures, and so taking the wind out of the pirate's sails. The practice is, we are glad to say, rapidly becoming more common. On the Continent it widely obtains; and in this country it will shortly, we believe, be very extensively carried out by the aid of the Autotype Company, the Photo-Relief Company, and others, to their own advantage and that of the art education of the public.

We subjoin a paragraph, from a recent number of the *Blue Budget*, which is well worth the attention of those concerned :—

> Mr. Graves, the printseller of Pall Mall, has been making one of his periodical raids on the photographic pirates of his copyrights. We wonder that it does not occur to the eminent publisher of prints that a far better way of stopping the opposition of his enemies would be for himself to produce photographs of the pictures whose engravings he sells. There is no doubt that the public likes the sun-prints of great pictures, and will purchase them, to the encouragement of those who infringe the copyright possessions of Mr. Graves. The law which invests a man with rights never designed him to use them to the exclusion of public benefits, and if Mr. Graves has the sole privilege of multiplying copies of certain works, he is not justified in refusing to exercise such a right. The profit that photographs will bring to those who execute them under the risk of penalties would far more amply recompense the lawful possessor of the copyright, and the public would then be supplied with representations of pictures that it desired cheaper than the cost of engravings, and in many cases better. So long as Mr. Graves is the dog in the manger, saying, "You shall not photograph, and I will not," we can have but little sympathy with his vindications at law of the rights of monopoly he misuses.

We cannot endorse all the remarks we quote. We hold that Mr. Graves and others in his position are justified in acting with their own property precisely in the manner which to them seems best, and we *do* sympathise with his vindications at law of the rights he has acquired in the same legitimate manner in which a grocer or a butcher acquires his stock-in-trade, namely, by purchase. But, whilst maintaining his fullest right to act according to his own judgment, and condemning as dangerous and unfair any attempt to question that right, we wish he would destroy piracy by driving it out of the market by legitimate photographs of copyright works.

THE ORIGIN OF THE SINGLE TRANSFER CARBON PROCESS.

In the report of the recent meeting of the French Photographic Society, published in our last, M. Davanne made a claim on behalf of M. Marion as the first to use albuminized paper for the single transfer carbon process. He said :—

> A mode of operating, perfectly similar, has just been described in England by Mr. Blair; it was published in France several days after the communication of M. Jeanrenaud, but the details and formulæ have not yet been given. The process is founded upon the employment of coagulated albumen, proposed a year ago by M. Marion, who has generously abandoned his patent. On seeing this communication from England, I deemed it right to claim for M. Marion the priority of employing albuminized paper, and to state what is already known to several members of the Society, viz., that M. Jeanrenaud made, we may say in public, the same experiments as Mr. Blair, with this sole difference, that where the latter used wood spirit, the former employed spirits of wine, to effect the coagulation. We believe that the two experimentalists pursued the same line of research, and arrived at the same gaol, in ignorance of one another's investigations, and this statement we deem it right to make to the Society in fairness to both parties concerned.

Without intending it—of that we are sure—M. Davanne, in making the reclamation, falls into error, and does less than justice to more than one English photographer. The use of albuminized paper is not a novelty now, nor was it twelve months ago, when M. Marion specified his patent. On May 12th, 1864, just after Mr. Swan first described his process, about five years ago, Mr. P. Henderson wrote to the Photographic News, describing a method by which he had succeeded in obtaining fine prints. He said :—

> Take a piece of albuminized paper (I have used the paper for silver printing, but, of course, the salt would be omitted when prepared for this purpose), slightly damp it, so as to make it quite sticky all over, lay the tissue gently down on it, beginning at one side, so as to prevent air-bubbles; lay a piece of clean paper over both, and rub down briskly till the two are quite adherent to each other, just as in mounting a silver print. Then, on a piece of clean glass, pour a few drops of strong alcohol, spread over the glass, and lay the mounted tissue down on it, paper side down; let it lay a few seconds, when the albumen will be thoroughly coagulated. Pin up till thoroughly dry, when it will be ready for development, and no amount of soaking will ever separate them.

During the same year hot water was also employed for coagulating the albumen for the same purpose. Mr. Swan, we believe, used albumen at an earlier period; but, regarding the single transfer process as imperfect and unsatisfactory, because it involved either a reversed image or the use of a transferred negative, he devoted his energies solely to the double transfer process, the results of which had no drawback. Mr. Blair devoted his attention to the use of albuminized paper for single transfer at an early period, with especial view to overcome various practical difficulties in the way of securing a perfect result, and, in July of 1864, published a method of transferring the carbon print to albuminized paper. The recently published article by Mr. Blair, to which M. Davanne refers, which appeared in our Year-Book issued at the end of December last, some time before M. Jeanrenaud's paper was read, did not profess to be the statement of a new process, but a description of a perfect and successful mode of working an operation already known. It is probable that the suggestions of both M. Marion and M. Jeanrenaud may have been original so far as they knew; their misfortune was that, not being familiar with our pages, the prior publication of the methods in question was unknown to them. M. Davanne makes the claim, to which we have referred, to fairness to the estimable gentlemen he names; we feel sure that he will understand that it is the same spirit of fairness, and from no lack of esteem for himself or MM. Marion and Jeanrenaud, that we now reclaim the use of albuminized paper and single transfer processes for our own countrymen.

TONING PRINTS ON OBERNETTER'S SENSITIVE PAPER.

Until it was recently introduced by Mr. Solomon, M. Obernetter's paper, prepared with collodio-chloride of silver, was not an article of commerce in this country, experimental samples only having reached the hands of English photographers. Amongst those who have tried it we have occasionally heard the complaint that it was difficult to obtain a deep purple or a black tone, the tendency being to warmth, various rich tints of sepia or chestnut brown being most easily obtained. The bath recommended by M. Obernetter is somewhat complicated, and not always successful. The simple sulphocyanide and gold bath gives very good results; but sulphocyanide is not a salt necessarily found in every photographer's laboratory. To make the use of the paper convenient, it is desirable that it should require unusual conditions, or the use of materials not always at hand.

To meet this necessity we have recently been trying an exceedingly simple toning bath with the Obernetter paper, and obtaining any tint of purple or black which can be required. The bath was improvised in a few minutes. It consisted of chloride of gold 1 grain, carbonate of soda from ½ a grain to a grain, dissolved in 5 ounces of warm water, and used as soon as cold. It toned admirably, steadily, and evenly, assuming a deep purple, which was retained in the fixing bath, and assumed a rich warm black tint when dry. From this we are led to believe that any ordinary gold bath in good condition would answer the purpose, and that the difficulties hitherto experienced have arisen from the use of unnecessarily complicated formulæ.

One of the most pressing points to be observed has been named before, but is worth naming again, namely, the importance of not touching the surface of the paper with the fingers before toning, as it is so sensitive to the least greasiness, which inevitably shows as a slight stain in the finished print. The superior delicacy, detail, and brilliancy possessed by prints on this paper (as shown at the photographic meeting on Tuesday evening), when compared with the albuminized prints from the same negative then shown, render a little extra trouble well worth taking.

Foreign Miscellanea.

The publication of the researches of Mr. Norman Lockyer and M. Janssen upon the spectrum of the sun seems to have called forth a plethora of communications upon the same and analogous subjects. At the *Académie des Sciences* especially, papers of this description have been very numerous. M. Rayet has presented a communication on the refrangibility of the brilliant yellow ray of the solar atmosphere; M. Richter has read a paper on the theory of light; a note by M. Mascart, on the visibility of the ultra-violet rays, has been put forward by M. H. St. Claire Deville. M. Morren has recorded the effects produced by the passage of the solar ray through chlorine, &c.

A commission has been appointed by the president of the *Academie*, to examine the communication of M. Duboscq, on the subject of M. Aug. Chevalier's photographometer; the commission is composed of MM. Regnault, Fizeau, and Abbadie.

The French Photographic Society have re-elected M. Balard as president of the Society, and MM. Peligot and Davanne president and vice-president of the Executive Committee.

Photographic literature has received an important addition by the establishment of a photographic journal in Holland; it is called *De Navorscher op het der Photographie*, and is published at Amsterdam.

A method has been suggested by M. Fierlants for taking accurate pictures of lofty architectural piles. He proposes, if the building is considerably higher than the spot whence it is photographed, to heighten the lens somewhat out of the centre of the camera, or, if the greater portion of the building is below the point of view, to place the lens rather below the centre of the camera.

The particulars regarding the Dutch Photographic Exhibition, to be held at Groningue in July next, have been published. Specimens of photography, photo-engraving, and chromo-photography are invited from professional and amateur followers of the art; gold, silver, and bronze medals, as also honourable mentions, being awarded in each class. Besides these prizes, a consolation recompense of 50 florins will be made to that successful competitor who resides at the greatest distance from the seat of the exhibition. All applications for space must be made before the 15th May next, and the specimens forwarded not later than the 1st July. The exhibition opens on the 6th July, and closes on the 20th of the same month. The Secretary of the Commission, M. Schutter, 92, Vischmarkt, Groningue, will afford any information.

A description of magic lantern, yclept *la chambre merveilleuse*, has been designed by M. Kruss, and exhibited with much success at a recent meeting of the French Photographic Society. The apparatus differs from the magic lantern in the essential particular that the image is seen by reflection, and not by transparency. The light of the lamp in the interior is thrown upon the image, which is reproduced and enlarged by means of a lens placed on the opposite side of the apparatus, a rack-and-pinion movement allowing of a sharp focus being obtained, so that a clearly defined reproduction is obtained upon the screen. A contrivance of this kind permits the exhibition of photographs of every description, as likewise of other designs, whether plain or coloured.

Dr. Van Monckhoven writes to the *Moniteur de la Photographie*, to warn the photographic public of an impostor who is travelling through Spain and Central France; the man passes himself off as the learned doctor, and announces himself as the author of M. Monckhoven's works.

In the *Photographische Correspondenz*, Dr. Adolph Steinheil describes at some length the best modes of choosing and verifying the qualities of lenses; the way to determine the focal length, the depth of focus, the size of the field, together with other useful optical information is fully entered into.

At the last meeting of the Vienna Society, Dr. Edmund Weiss delivered a lecture upon the application of photography to astronomy, with special reference to the results obtained during the solar eclipse of 1869.

During a recent discussion at the Berlin Photographic Society, on the retouching and varnishing negatives, Dr. Vogel stated that M. Grasshoff had found that previously to retouching the negative, it was well to render the latter somewhat rough, in order that the pigment or material used might be easily applied. The roughening of the negative could be safely done with a little cuttle-fish powder, which is rubbed on by means of the finger.

The *Photographisches Archiv* contains news of M. Schwab's phototype process. The results are stated to be analogous to those produced by M. Albert's process, although the grain is scarcely so fine; the plate requires no more time to produce than an ordinary silver print, and will yield as many as a thousand impressions. The printing is done in precisely the same manner as in the ordinary lithographic process.

The conditions of the Voigtlander prize have been settled: a gold medal of the value of 30 ducats will be awarded to the discoverer of a dry-plate process which surpasses in sensitiveness and certainty the present ordinary methods. The candidates must be members of the Vienna Photographic Society at least six months prior to the adjudication of the prize;* the specimens sent in must bear a cipher or design, and be accompanied by a sealed letter bearing a similar device; the 30th September, 1870, is the last day on which competitors may send in specimens; two negatives 10 by 12 at least must be forwarded, accompanied by positive prints, one of the negatives being of an architectural subject, and the other of a landscape, containing foliage and a perspective of at least a mile; the mode of operating must be detailed, and the materials required for the purpose enclosed, in case the commission may wish to experiment with the same. The negatives gaining the prize will become the property of the Vienna Society.

At a recent meeting of the Vienna Photographic Society, M. Carl Haack read a communication on the multiplication of negatives by means of the collodio-chloride process.

PHOTOGRAPHY IN ASTURIAS, SPAIN, 1867-68.

BY "TWO JOHNS."

Perhaps the experiences of two amateurs in the above photographically unknown province may not be without interest to some of your readers; and in the hope that we may direct the attention of artists to this part of the Peninsula, we venture to send our mite to your records.

We left London June, 1867, by the Str. Murillo, and arrived in three days at Santander, where we were detained three days by the quarantine regulations, which time we devoted, in part, to ascertain the efficiency and fulness of our equipment, and also to begin a few views on an island where we were permitted to land each day.

Before further detail, perhaps the particulars of our outfit may be of use. A Kinnear camera, 9 by 7; Dallmeyer's wide-angle lens, 8½ by 6½; a Horne and Thornthwaite view lens, 9 by 7; an Edwards' tent; a large box containing collodion, bath, chemicals, &c.; two grooved boxes of 50 cleaned 9 by 7 plates each; a dozen or two 6½ by 4¾ and 4¼ by 3¼, also a spare lot of the larger size. Our collodion was Maw-

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* It will be seen that actual residence in Vienna is not necessary.—Ed. P.N.

[illegible] and Brown's, half-and-half, 4×5 plates, [illegible] each, besides all the necessary subsidiary articles.

Soon after leaving Santander and getting out of reach of railways, our miseries commenced by the rough transport of our traps on the diligences, the springs of which were the worst. The roads were so bad, the jolting and thumping over loose stones and in ruts threatened destruction every minute to our traps. At the very first opportunity we looked into the chemical box, but were agreeably surprised to find all things quite safe, thanks to the very careful way our friend Mr. Ernest Edwards had packed them.

The road was along a series of hills, valleys, and rivers, bounded on the left by a range of mountains snow-topped, of from 6,000 to 8,000 feet high. We were now in the principality of Asturias, the Wales of Spain, resembling our principality both in similarity of style of scenery (though on a very much larger scale), and in giving the title to the eldest son of the sovereign.

We set to work the morning after our arrival, but could not succeed to our satisfaction; the light, though good, seemed wanting in actinism; indeed, throughout our tour the exposure for views, &c., ranged from fifteen seconds for the shortest, with the second stop, to three or four minutes for the longest, with the Dallmeyer lens.

We had done with diligences and now had to commence with mules. We hired a boy with his mule for our use for something less than three shillings a day, we being at no charge for either animal's food, &c. We had a small portmanteau, the chemical box, one 24-plate box, one dark tent, camera box, &c., which all was made to balance on the mule's back. The muleteers had their beasts admirably. All along the road were innumerable "bits"; to have attempted a quarter of the best would have taken all our time; it was the case in almost every part we visited. We gave up taking any unless something very striking, or we could get two or more unexceptionally good subjects together, as we found resting by the road, unpacking and packing the mule could not be less than three-quarters of an hour, and then the negative was unfinished, although fixed, but not [illegible], as was put in the process in its way, to await an opportunity. We found we could not depend upon [illegible] in many parts, the rough tracks, as the so-called roads mostly were, frequently displaced them from the grooves, causing the plates to stick together, thus leaving the films in great jeopardy. All throughout this province we found splendid examples of Byzantine or Romanesque architecture in the churches; these are peculiarly plain and elevating, dating frequently from the middle of the ninth century to the latter end of the twelfth, and were mostly in excellent preservation, thanks partly to their solidity, and to their immunity from disturbance which this province has always enjoyed, on account of its isolation from the rest of Spain, by the barrier of mountains on all sides.

We found the people here anxious to be of any assistance to us. It was really wonderful to notice their eagerness to see the negatives and, at the same time, their great caution of approaching too close to us or our traps, for fear of doing harm. Our apparatus often excited wonder; sometimes they took the tent for a musical box, or as being some machine for marking out roads, [illegible] for engineers projecting lines of railway, or being in search of mines. One, indeed, on showing the negative of his church to the priest, he shook his head, and ascribed our production to diabolical influence, nor could we persuade him of his error [illegible] back in the beginning place. This was in 1867. We sent him a print on our return home, and saw him again in 1869, still as unbelieving as before. We found the priests ready to show their churches, relics, &c., and there to photograph inside or take measurements and drawings where the interior was, as it almost always was, too dark to work in. In Oviedo Cathedral the sacristan opened the great west doors so that we might get a view of a fine marble screen, standing away, besides priests in the ecclesiastical robes and people praying in front of the altar, all without a word from us. In the treasury of the same Cathedral we were allowed to have the "Liber Testamentorum," a priceless treasure, and permission for four hours to copy some of the illuminations.

Perhaps we may be excused by any of our readers for narrating an incident that occurred here, showing the great laxity of religious feeling on some subjects. We wanted to have the Cathedral and Chapter [illegible] to ourselves, so as to work more comfortably. This we could do between eleven and three o'clock; but when we got to work found that the sacristan was obliged to be away and would put down the key of the inner door, which prevented us getting water from the fountain. He told us to bring here the water from the holy water stoup, which we [illegible] without the slightest scruple on his part. The negatives we wanted were all we could wish. The Cathedral possesses in its treasury an immense quantity of most ancient relics collected here during the invasion of Spain by the Moors, who were repelled in their attempts to conquer this province. No matter which way we went in this country there was always some interesting view or bit. In fact the artists would find Wales in general, and [illegible] in particular, have a [illegible], and treasures here with their brushes or cameras. We consider them such a series of subjects, whether mountainous landscapes or architectural studies, they would find such as they little dream of, but a knowledge of the language, Spanish, is a sine qua non, and adaptability to put up with rough lodgings and food must also be taken with you; but to your true lover of nature these are nothing.

Our journey in the province in 1867 lasted a month. We had not a single breakage or mishap. We made our way back to Santander and home through Paris, glancing at the photographs in the Exhibition for an hour or two. In 1869 we started in May via Paris. We here met some difficulties, for on our arrival in Paris we found our bath bottle broken and three of silver bottle damaged, also some things wetted and stained. It was a wonder it was not worse, considering the brutal treatment luggage of all sorts receives in France, particularly at the Custom. We repaired these losses in a day or two, and were put on to our old ground. Our journey was to the more western districts of the Province, which we had left undone in 1867. We were somewhat unfortunate, having, though with careless [illegible], the mules passing between some rocky heights the edge of the plate-box, breaking many clean plates and a few negatives. Luckily, some had been [illegible] elsewhere, had no mishap.

Our time on both occasions was very much taken up with constant [illegible], cleaning windows, filling bottles, &c., but we had wished we could have wanted a dry process with some degree of sensibility; but when one is so far away and in such an inaccessible country, it is the surest plan to use what the negative from the spot. Nearer home we would feel confident in the use of any particular hand to trust a dry process, the amount of extra luggage, time and anxiety demanded by the wet collodion would, in an uncivilized country, where, if anything is lost or goes wrong, you are in a desert, [illegible].

We hardly need remark that the views were [illegible], of Ross and Co., finding the Dallmeyer did very well in used, except where the foreground suffered by enlargement, as in the instance of a road or street close by. The developers were iron, one of 4 grains protosulphate, 1 minim glacial acetic acid, and 20 grains protosulphate, 1 minim glacial acetic acid, which we mixed, or used simply according to circumstances. The varnishing we left until our return; and well we did, as many of the negatives required a little more intensity. Altogether, in the two trips, we obtained 170 views, &c., 60 in the longer journey in 1867. Should any of your readers desire more particulars, we shall only be too glad to afford them. Thanking you, Mr. Editor, for your kindness in allowing this paper to appear in your pages, and hoping that it may be of some service to the photographic cause.

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* [illegible]

A CONVENIENT DARK TENT.

BY THOMAS GULLIVER.

Your correspondent, "C. W. H.," in last week's News, wishes to have a few particulars respecting a tent for working 10 by 8 plates. I now offer for his and others information my experience during the past twelve years in making and working various tents and developing-boxes, which latter have many advantages over tents. A developing-box I prefer for many reasons. It should possess strength and lightness, which can be secured by making it of thin wood, backed with thin canvas glued all over it on one side. This prevents warping, and gives great strength (panels of carriages are done this way). It should be well varnished, and the flexible material should be smooth, to avoid dust. For this purpose nothing is better than good American cloth, covered on the outside with black casban. The top should be sloping, so that it can be stowed away in a railway carriage or in the van; and, being sloping, there will be less chance of heavy boxes being put on the top.

The less loose canvas you can use the better, as it harbours heaps of dust, which is pretty sure to settle upon the plate during development.

I object to getting inside, on account both of the loss of time and heat, and other inconveniences. Such a box, with the advantage of former experience, I have now nearly completed, and I have made it light and strong, for if anyone fondly imagines that a tent on wheels can be used in this part of the country, he is deceived. Soon as I can I will send a full description of the box; the weight, when packed and when empty, size, &c.

The boxes and tents that have come under my notice have been quite enough to make anyone faint at the idea of lugging such a heap of useless lumber about in a rough country on a hot summer's day. Let me describe one in general terms, which, with little alteration, will answer for many. A large black box, about 2 feet long by 19 inches wide and 6 inches deep, made of wood nearly one inch thick, and heavy enough of itself, empty, to make a good load, has in it a heavy plate-box for the clean plates (this is unnecessary), another plate-box for draining (this might be half the weight), a tin box holding about a half gallon of water, and a tube and stop-cock, when about 6 or 8 ounces of water would be sufficient. Add to all this, about double the number of bottles that are required, and to support all this load is a firm, well-made stand, with a cast iron top, useful, no doubt, but dreadfully heavy. The whole affair is near upon three-fourths of a hundred weight. The weight of box, ready packed for a day's work, should not exceed 18 or 19 pounds, including stand and all. If it is more, wet plate photography is a bore, and the amateur had better trust to the mercies of dry plates.

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FIXING NEGATIVES WITH HYPOSULPHITE.

BY RUSSELL SEDGFIELD.

I think that I can satisfy your correspondent, Mr. Hele, with respect to the safety of negatives fixed with hypo. I have had a pretty large experience with it, under all sorts of circumstances, at home and on journeys, and have no doubt whatever of its perfect safety, if only reasonable care be taken in washing the plate. And here it is that the error lies. It seems to be thought that a large quantity of water is required, and that if a gallon or two be poured over a stereo plate, it is sufficient. But I think it is soaking that does the job.

Let me describe my ordinary practice when from home and water is not too plentiful. I first flush the plate with a few *goes* of water, rocking it a little, and also wash the back. This removes all the surface hypo. It then goes into a flat ebonite dish of water, where it remains till the next is ready, or during the packing of the apparatus, and then receives a final flush or two of fresh water. This dish does not require renewal with every plate. There seems very little hypo to soak out, but it is just that little that does the mischief. The recent fire on my premises has led to a grand rummaging out of old negatives, and I can say that although I am not such an ass as never to have a failure (for I've had plenty, and trust, rather than hope, to meet many more), my plates are, at any rate, free from the hypo disease, whether in the shape of crystals, fine hair-like cracks, or honeycomb risings of the film, with all of which, and a great many other queer phenomena, a photographic printer is pretty sure to make acquaintance.

And here let me warn your readers against stopping-out skies or any large spaces with water-colours, and particularly moist colours. Such treatment is almost certain to spoil the negative. The effect may not be manifest for years, but some warm day, on looking out the negative and putting it to print, it will be found that the whole of the painted parts chip and peel off, exposing the bare glass. The cause is in the hygroscopic vehicle used—gum, for instance, which expands and contracts very considerably, according as the weather is damp or dry, and gradually loosens the adhesion of the film. I have not noticed that gamboge behaves in this way, though I never use it myself. Indeed, it is a mystery to me how it is that photographers seem to think that any shade of yellow must be more opaque than black. I find "Bates's Black" perfectly safe, and no doubt other varnishes of the same character are so likewise.

Norbiton, 12th April, 1869.

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COPYRIGHT IN PAINTINGS, AND PHOTOGRAPHIC PIRACY.*

The question of copyright has been complicated, in a degree greater than might have been anticipated, by the introduction and development of photography. There can, of course, be no exclusive right of copying either living faces or living scenes; but it is a very simple principle which the magistrates are acting upon, to decide that when a man has purchased a picture, in order either to engrave or to photograph it, the whole belongs to him, and cannot be appropriated by any one else without fraud. In the interests of art this is a view which ought to be unflinchingly upheld. We notice it, because over the minds of some judicial authorities there appears to impend a doubt whether a photograph can, under any circumstances, be a piracy? More than that, a multitude of the photographers themselves deny the proposition altogether. Probably, the decision given at the Guildhall on Wednesday will convince these latter gentlemen that their argument is fallacious, because, for them, a fine of £155, with the alternative of nine months' imprisonment, may be more persuasive than a quotation from Renouard or Lowndes. But their pleas, notwithstanding, are singularly bold. They contend that the photograph taken from the engraving of a picture is not an original work. They forget, or pretend to forget, that the picture itself is property. And so they proceed to pilfer, at second hand, declaring that they only rob a robber. Now, the law expressly provides against these misappropriations, and we only wish that in all the police courts of London it were more equally applied; for there can be no doubt but that photography is assuming a place hitherto occupied by a more legitimate art. It is rendering the rewards of genius more rare. It is bringing the beauty of nature home to the millions cheaply, satisfactorily, and to the great despair of students, who see the perspectives of their future lives blocked up by the camera and the chemical bath. But there is a possibility of reconciling the two interests, temporarily hostile. It consists in this: as the artist, formerly, when the age of "magnificent commissions" waned, relied on the line engraver, who, instead of the "Ten Thousand a Year" class, became his principal patron, and made a fortune for himself and the public favourite out of ten-guinea "proofs" and guinea "copies;" so, at present, that more costly system having been superseded, the artist paints and makes his bargain with the photographer. The picture remains, and obtains its place of final honour in a gallery; but, meanwhile, the world wants to see and possess it. The world generally will not wait, in our time, with the steel engraver's patience. It demands an early supply. This is furnished, and no unworthy substitute is it for the laborious results of a precious labour in a past day. But there still lingers — flourishes even—a taste for line engraving. When, therefore, enterprising artistic firms undertake to meet this taste, it would be utterly impossible for them to continue unless the law gave them a copyright, and protected it. The art of engraving, indeed, would vanish from among us were it otherwise, and it is an art which we cannot afford to lose. It could not survive, however, if, for example, a work of three years' toil, purchased for thousands of guineas, immediately upon being offered for sale could be reproduced by the cheap free-traders of photography, and hawked all over the town as though it bore the original stamp. The instinct of economy is wonderfully strong, even among those who sympathise with the fine arts. It is very tempting—a Millais for half-a-crown, when the engraving might cost five guineas. But, in the *interim*, what becomes of the encouragement to genius, of the capitalists' venture, of the primary and the secondary art employed? It may be denounced as harshness to lay heavy penalties upon an individual or send him to prison for violating a copyright; but a copyright is as much property as a purse or a plate-chest, and the man who appropriates it without authority is just as much a thief. A sort of immoral opinion upon this subject has too long prevailed, and it is highly desirable that, at last, a true construction should be put upon the law. Let the cheap photographers be as facile as they please; they must not poach, or, if they do, they now understand pretty well how the magistrates are prepared to deal with them. The fact, however, which, more than any other, justifies severity, is that this fraudulent traffic is found so profitable that no penalties imposed under the existing law appear to have any deterrent effect.

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* *Standard.*

THE STEREOGRAPH.

BY PROFESSOR JOHN TOWLER, M.D.*

Answer to the fifth question.—Optically speaking, one lens is as appropriate as another; for the relative distances are preserved, whether the focus be large or small; but there are circumstances which, of necessity, sometimes require a short focus; for instance, a precipitous crag, a tall spire, a deep ravine—to stereograph these the short-focussed lens, the stereo-rectilinear, or some equivalent lens, is an absolute *sine quâ non*. Again, to stereograph an extensive landscape extending away on the other side of a broad stream, a lake, or valley, with such a lens—that is, with the short-focussed lens—would be quite erroneous, because all that is principally required in this stereograph is beyond the foreground, and so can be reproduced boldly by a long-focussed lens alone. The choice, therefore, of the lens depends upon the nature of the view to be stereographed.

Answer to the sixth question.—The answer to this question can be deduced or derived from the preceding answers. If the stereographs are taken by lenses the distance between whose centres coincide in magnitude with that between the pupils of your eyes, and are cut out of this width precisely square and parallel, then such a stereograph will be easily superimposed, will produce neither pain nor difficulty in obtaining the requisite relief; whereas, if these rules are set at defiance, and the stereographs are not taken of the proper size, or, even if they are, if they are not cut out square and parallel, and not mounted square and parallel, you will be troubled with distortion in the solid picture, and experience both pain and difficulty in the superimposition.

Answer to the seventh question.—This question would seem to indicate some doubt in the efficacy or advantages of a wide-angle lens. There are few stereoscopic lenses whose focal lengths are less than 2½ inches; and if such lenses will produce a sharp picture over a circle whose diameter is 4 inches, the ordinary rectangular stereograph can easily be cut out of it of the requisite size and shape all over. Let us inquire, therefore, what the angle of view is in this special case. By trigonometry this turns out to be little over 77°.

A lens of the same focal length that covers a circle whose diameter is three inches and three-quarters of an inch is also capacious enough for stereoscopic purposes, because a rectangular picture two inches and a half wide by two inches and eight tenths can be cut out of the circle. A lens of this capacity has an angle of view of 73° 41′.

Such lenses as the two just mentioned are excellent, but are not exactly what we should term wide-angled lenses. Let the angle of view be 90°; in this case we shall find the circle which it covers to be five inches for a lens whose focal length is two and a half inches. This latter lens is a wide-angle lens. Now, several photographers labour under the erroneous idea that the wide-angle lens contains more material in a given space than a lens of the same focal length, but whose angle of view is much smaller; they imagine that such a lens condenses, as it were, a landscape into any desired size. The stereograph (two and a half by three inches) produced by each of the above-mentioned lenses contains exactly the same amount of material, and each corresponding object in the respective pictures is also of the same size. It is evident, therefore, there was a good reason to ask the question: "Of what use is the so-called wide-angled lens in stereography?"

I will now answer the question. The two narrow-angled lenses above-mentioned are first-rate lenses in stereography for all objects which are neither too high nor too low—namely, for such as can be photographed on the ground-glass without tilting the camera either up or down; for if tilting is necessary, it shows to you that some part of the picture would overstep the small circle, either above or below, and would consequently not be comprehended in the stereograph, not even if the lens could be either elevated or depressed by sliding the front. When the circle is five inches in diameter there is a large excess of space to work in, almost enough for two stereographs on the same plate.

In order, therefore, to be enabled to photograph lofty steeples, spires, monuments, or deep ravines, in confined situations, we require lenses endowed with wide angles and of short focus; and these are the only places, together with interiors, in which such lenses are indispensable.

THE ENAMELLING PROCESS FOR PRINTS.

BY E. A. KUSEL.*

I notice that parties are troubled to succeed in enamelling photographs properly, and having had much trouble myself in the same direction previous to attaining the perfection I have brought the process to, I propose to describe the method which I find entirely successful, trusting that it may do good to others.

Materials Needed.

1. Thick plate glass 8½ by 10¼ inches.
2. Newly-made collodion.
3. French transparent or Cox's gelatine.
4. A pitcher to hold the gelatine.
5. A flat porcelain dish larger than the glass.
6. A wooden roller 10 inches long and 1 inch diameter.
7. A clamp 10 inches wide, made as described below.

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* Continued from p. 164.

* *Philadelphia Photographer.*

8. A strip of sheeting 10 inches wide and long as convenient.

9. A regular joiner's glue-pot.

10. Card-mounts printed with six or more cards on each sheet as per drawing below.

First Operation.

Clean the glasses well, and, after they are dry, rub them with the following mixture:—

No. 1.—	Alcohol	4 ounces
	Rotten-stone	enough to make it creamy
	Nitric acid	20 drops
	Water	4 ounces
No. 2.—	Alcohol	4 ounces
	Pure nitric acid	20 drops

Rub the glasses well with the first mixture, and then finish and polish it with the second, when they are ready for the next operation (remember, we use no washes; it is superfluous), which is to coat the plates with collodion made as follows:—

Sulph. ether (conc. fluid)	6 ounces
Alcohol	3 ,,
Helion cotton (No. 2)	54 grains

Let the above settle, or filter for immediate use; now remove all dust from the plates, and coat them in the usual way. When the collodion becomes thoroughly dry, the plates are ready for the next operation. Two or three hours' drying is enough, or you may dry them over a hot iron, but it is better to let them dry slowly.

Third Operation.

Having procured some card-mounts 11 by 9 inches, with six cards printed thereon in red ink, or any other colour you choose (but remember, the card-mounts ought not to be too thick, and printed with good ink, that will not dissolve and flow over your prints during the enamelling), take a long strip of sheeting a little wider than your mounts, wet it thoroughly, and stretch it out on a piece of glass as large as the mounts. Now lay one of the card-mounts on it, printed side up; now lay another upon it, printed side down, and lay the wet cloth over it; then another two on them in the same manner as above described, and cover up with the cloth; and so on until all card-mounts are within the folds of the wet cloth. Now lay another plate of glass on the top, and set something heavy right on them, and let them get thoroughly dampened.

Fourth Operation.

Procure some of the best gelatine (French transparent cases, or Cooper's isinglass, which I prefer, as I think it is more tenacious, and not so brittle when dry), and take of—

Gelatine	3 ounces
Water	10 ,,

Put the gelatine and water in a glue-pot, and the same in a kettle with water; set on a fire to boil. The gelatine will soon melt, and when melted, filter through a linen or cotton cloth into a clean pitcher, and let it cool down to 100° Fah. While the cooling is going on we will prepare for tea.

The Fifth Operation—the Mounting of the Prints.

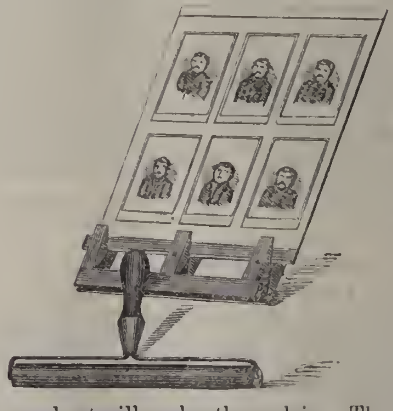
Dampen the prints in a wet cloth, or in any way to suit your own convenience. Now take one of the dampened card-mounts, lay it on a sheet of glass, and mount the prints with gum arabic, a little thicker than is generally used to mount plain prints. Having mounted your prints, return the mounted board into the wet cloth, but, this time, so that they are back to back, else the prints will stick together, and you will have trouble in taking them out of the cloth. The prints being all mounted and again returned to the folds of the cloth, get ready for the

Sixth Operation, or the Enamelling.

Take a flat, shallow, porcelain dish, larger than the glass; set it on a table; lay one of the collodionized plates into the dish, collodion side up. Now take one of the damp card-mounts out of the wet cloth, and lay it, print down, upon the glass. Put on the end towards you the clamp to hold the card-mount down to the glass, about three-quarters of an inch. Now bend backwards to you the card-mount. Then flow over the glass next to where the clamp holds the board down to the plate, crossways, a sufficient quantity of the warm gelatine. (Practice will soon teach how much.) Do not flow on too much—and worse, if too little. Having done this, seize the card-mount with your left hand, and, with the right, the roller. Bend the card-mount down towards the glass, and, at the same time, press your roller steadily, with the right hand, down upon the board, three inches from where the clamp holds the board and glass together. Roll from you, as you lay the board down, and you will squeeze out the superfluous gelatine. Then take off the clamp. Turn your glass (the side where the clamp held the board) from you. Press, with a slight pressure, upon the middle of the card-mount, and roll from you again, as before, and the remainder of the superfluous gelatine will be pressed out into the dish. Now take your glass, with the pictures, and lay it down upon a flat board or table, and set some weight upon it—a five-pound bottle, &c.

Having finished enamelling, let them lay about half an hour with the weights upon them. Then take them up, and lay them some place to dry slowly, but thoroughly; when, after about twenty-four hours, or more, you may cut around them with a penknife, and they will leave the glass readily, and with a beautiful polish. Do not try to pull them off; generally they will come off themselves when dry.

I send a card copy of the clamp I use, and also the roller. A wood-cut will make them plain. The clamp, as you see, is made of three spring clothes-pins, and the roller I made of a broomstick.



Failures.

1. Blisters before drying—The gelatine is too thick and too warm, and the pressure of the rolling not enough.

2. Blisters after drying—The gelatine is too thin or too hot, or you pressed too hard on the rollers.

3. The cards will not leave the glass after they are dry—The collodion was not tough enough, the gelatine was too hot, the old glasses had not been carefully cleaned, or dried by artificial heat, or you forgot the nitric acid in the alcohol for polishing.

After the card-mounts are removed from the glasses, put them (the glasses) into cold water, and the gelatine will swell up, and can be easily removed.

Hoping this will prove some service to my fellow-photographers, I give this, my dear-bought experience, to those noble spirits who have contributed so much for the good of our beautiful art, thinking this will not interfere with B. and R. patent applied.

Oroville, January 24th, 1869.

MISCELLANEOUS PHOTOGRAPHIC HINTS.

BY M. CAREY LEA.*

Wet Plates.

Keeping Wet Plates.—Every one knows that when it is required to keep plates for a considerable time between sensitizing and development, certain troubles are likely to occur, prominent amongst which is that of marbled stains.

These stains are of two sorts; those that occur anywhere on the plate, and those that appear at the two corners that were lowest in the slide. The first may generally be obviated (as I showed some time back) by curtailing the interval between coating and plunging into the bath to the smallest possible amount. But this precaution does not avail to prevent the trouble at the corners, which indeed is, of course, to some extent kept down by a very careful wiping of the glass corners in the slide, and other well-known precautions.

I had recently occasion to keep some 8 by 10 plates for about half an hour after sensitizing, and had much trouble with the stains at the corners. Every care was taken. The glass corners were perfectly cleaned between each plate. Each plate, after sensitizing in a bath, itself in excellent condition, was replunged into another 60-ounce bath perfectly new, and kept exclusively for this office of bringing the plates to a perfect condition to meet their delay I need scarcely say that they were allowed to drain thoroughly on pieces of blotting-paper several times changed before placing in the slides, and that blotting-paper was invariably placed along the lower edge. Still, although the plates were perfect in other respects, these mat silver stains at the corners would occasionally show themselves, and rise an inch or two into the plate.

I at last hit upon a remedy which, so far as I am concerned, is new. Others may have used it, but I have never seen it in print, or heard of its being used. It is but a slight modification of what is often done, but this slight modification just makes the difference between effectiveness and the reverse. I procured a sheet of extremely thick, soft blotting-pad, and cut strips the length of the plate, and about 1¼ inches wide. Such strips have often been applied to the lower edge of the plate, but the difference is in the manner of applying. I fold a crease the length of the strip, and about ⅛th of an inch wide, pressing it down sharply, then opening out to a right angle. Having placed the well-drained plate in the shield, I slide it up a little, and slip the ⅛th of an inch portion under the plate. I do not mean under the face of the plate—this would have many objections—but under the edge. The broad part of the strip now lies flat on the back of the plate, with its narrow, bent border under the edge, and touching the edge (not the face) of the collodion film, from which it continues to receive the drainings, which the broad part behind carries away and keeps from collecting.

To show the effectual action of this arrangement, the following may suffice. The first time I made the trial, it was with the 8 by 10 plate turned long way up and down. The plate was well drained upon blotting-paper, several times changed before putting into the slide. Nevertheless, on examining the protecting strip when the plate, about twenty-five minutes after, was taken out, the bath solution had risen in places an inch from the lower edge. Perfect freedom from stains was obtained; whereas, in the case without this description of protection, very bad ones would have resulted. Simple as the method is, I find it very valuable, and I do not believe that any one who tries it in long exposures will ever neglect it.

Glass Bath.—Endless trouble is experienced by photographers in consequence of using porcelain and other baths instead of glass. The former may often answer every purpose, but the glass is always right. Glass may appear more liable to break, but with common care it is very safe.

Dry Plates.

Drying.—The paramount necessity of exactest care in drying the plates is only beginning to be understood. An important point is this, that the appearance of a plate can never be depended upon to indicate whether it is dry or not; for a plate may look dry, and yet retain enough moisture to seriously diminish its sensibility, if evenly distributed which the chances are a hundred to one it will not be.' And if unevenly distributed, the sensitiveness of different parts of the plate will be unequal, and stains and spottiness will eventually result. These will, in most cases, be ascribed to the defective nature of the process, or to the often asserted essentially uncertain nature of dry plates.

As, then, the appearance of a dry plate affords no sufficient criterion as to its thorough dryness, it becomes necessary to adopt a regular system of drying, which the experience of the operator shows him to be in every case sufficient.

In a close box over sulphuric acid, plates dry slowly, but very thoroughly and evenly. Even with a liberal supply of acid frequently renewed, I do not consider them safe short of twenty-four hours.

By the direct application of heat, plates may, of course, be dried through and through in a few minutes. Nevertheless, I do not like the method. The drying has seemed to me less regular and the plates less sensitive. Further, there is with many collodions a tendency to split if dried fast. Collodion that never splits when dried slowly will sometimes fly entirely to shreds when dried rapidly; I have lately seen this happen with drying against a pan of hot water.

It is also, I think, a bad plan to put newly-made plates to dry in a dark-box along with others already half dry or quite dry. After a set of plates has been made, it is best to make no more within twenty-four hours, then remove the dry plates into a storing-box or into slides, and put the new ones in.

Examining plates to see how they are getting on is another certain source of trouble; a plate so disturbed will always develop irregularly. Systematic work is absolutely essential in dry-plate photography; the operator feels his way, and having decided that a certain course leads to success, he follows that exactly, unless, indeed, he intentionally wishes to try variations and note results; or, if plates are to be made with shorter intervals than the above, then two or more drying-boxes should be provided, and, in all cases, those that are once in should be left undisturbed until taken out for use or storing.

Hot Developers.—The use of the developer hot is a most powerful aid in dry-plate photography. Various degrees of heat are useful. A tepid developer may be in all, or nearly all cases, advantageously applied; a shorter exposure is sufficient, and considerable time may be saved in the development, especially in cold or cool weather.

The actually hot developer will, of course, be reserved for those cases in which the first treatment applied indicates that the exposure has been insufficient. In this way a much more harmonious negative will be got, than if it be attempted to force out the image with one at the ordinary temperature; for the water supplied by the street pipes is always, even in summer, lower than the temperature of an ordinary room, and the plate is instantly cooled by the developer coming into contact with it.

There is a certain analogy between the action of heat and cold, and the influence of the chemicals themselves, which it is well to bear in mind. Heat acts like pyrogallic acid in forcing out detail and strengthening the action of the ammonia (in the alkaline) or of the silver (in the acid) development. Cold may be compared to the action of bromide of potassium in the alkaline, or of acetic or citric acid in the acid development. The control of these agencies is easily understood and obtained, and affords a new and useful element of power in the development. When a set of dry plates are to be developed, it will be found very useful to place a vessel of hot water beside one before commencing, and vary the temperature of the application according to the indications obtained. In nine cases out of ten, a tepid developer will be found more pleasant to work with than a cold one. The full advantage of the warmth is best got by developing in a pan.

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* *Philadelphia Photographer.*

Proceedings of Societies.

Photographic Society of London.

The usual monthly meeting was held on the evening of Tuesday, April 13th, Mr. J. **Glaisher**, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed, and the following gentlemen were elected members of the Society: Messrs. H. Bailey, G. Salting, H. Ashdown, and J. Waller.

Mr. **Brown**, of the Royal Arsenal, Woolwich, then read a very complete and interesting paper on the history, manufacture, properties, and application of gun-cotton, illustrated by some very successful experiments.

Mr. **Sebastian Davis** asked what method of drying was found most safe and efficient.

Mr. **Brown** said it was dried in stoves at a temperature of 120°, which was quite safe. Indeed, it might be raised to 150° without risk.

Mr. **Spiller**, referring to Mr. Brown's remarks on the importance of perfect washing—as washing with a dilute alkali—as a preventive of spontaneous decomposition, said that the collodion film after fixation was practically in the condition of gun-cotton washed with a dilute alkali to ensure entire elimination of all trace of acid, and hence, probably, the perfect safety of these films which was universal in photography. He wished to refer to the beautiful modification of Dr. Liesegang, known as papyroxyline. He had recently examined some samples placed in his hand by his friend, Mr. Wharton Simpson, and Mr. Solomon. He found them perfectly soluble, in about the proportion of ordinary pyroxyline, in equal parts of ether and alcohol, yielding a fine film, perfectly structureless, not contracting in any unusual degree after drying, and having no tendency to dissolve when spirit varnish was applied. As yet he had not had opportunity for comparative experiments as to sensitiveness.

After some further conversation,

The **Chairman**, in cordial terms, proposed a vote of thanks, which was carried by acclamation.

After being duly acknowledged,

Mr. **Solomon** exhibited a number of very fine prints on the Obernetter collodio-chloride paper, which were much admired, their rare delicacy being made apparent by comparison with albuminized paper prints from the same negatives shown with them. Mr. Solomon also distributed examples of the paper.

Mr. **Phillips** exhibited a model for a photographer's velocipede, to carry the tent, &c., for operations in the field.

After announcing the description and demonstration of Mr. Johnson's carbon process at the next meeting, the proceedings terminated.

North London Photographic Association.

The usual monthly meeting was held in Myddelton Hall on the evening of Wednesday, the 8th inst., Mr. **Cooper** in the chair.

The minutes of a previous meeting were read and confirmed.

Mr Barnett, the Honorary Secretary, then exhibited in the magic lantern a fine selection of photographic slides, numbering seventy or eighty, contributed by Mr. J. T. Taylor, consisting of the works of Mr. Stuart, of Hammersmith, Messrs Pumphrey, and others. The exhibition was very successful and satisfactory.

After votes of thanks, the proceedings terminated.

South London Photographic Society.

The usual monthly meeting of this Society was held in the City of London College, Mr. **Sebastian Davis** in the chair.

The minutes of a previous meeting were read and confirmed.

Mr. **Cobb** exhibited a fine example of the new photo-crayon portrait, together with the negative from which it was produced, illustrating the possibility of obtaining a soft, clean, well-modelled transparency, suited to photo-crayon work, from a very intense negative. He also exhibited a couple of fine enlargements on wet collodion, toned with gold, and transferred to white paper. Some conversation on the subject of transferring collodion prints ensued, in the course of which Mr. Cobb remarked that he preferred to transfer the film whilst wet, the chief difficulty he experienced being a tendency at times in the film to crack.

Mr. **Tayler** exhibited some photographs of velocipedes, and a conversation on the subject followed.

The **Chairman** exhibited an exceedingly convenient and portable vehicle for carrying a tent and other photographic apparatus. It consisted of a light flat box, with handle to carry it. In the box were axle, wheels, handle, &c., which were quickly and easily attached to the box, so as to form a two-wheeled hand-truck. After some further conversation,

Mr. **Blanchard**, according to arrangement, introduced the subject from the Question-Box, "What is the principle involved in the production of extreme sensitiveness in wet collodion?" He did not intend, he remarked, to enter at any length into the subject himself, but rather to set the ball rolling, which might be caught up by other hands, and an interesting discussion evoked. He would observe, first, that a primary element in the question was the strength of the nitrate bath. In the old days, when simply iodized collodion was used, the 30-grain bath, which had been decided, in some arbitrary way, was the standard strength, answered well enough; but now, when bromides were freely used, a 40-grain, or even a 50-grain bath was frequently imperative. A common error, too, in relation to this was the tendency in photographers to overlook the fact that the bath got weaker with working, and required replenishing with silver. On the question of collodion, he would just throw out one or two hints to aid discussion. He might remark at the outset that he had suffered for many years from "Hardwich on the brain," and Mr. Russell Manners Gordon had recently informed him that he had suffered in like manner, so misleading, in relation to the manufacture of collodion, were the instructions of Mr. Hardwich. The use of acids at a high temperature he considered all wrong. He preferred a low temperature, and the addition of as much water as could be added without producing an insoluble cotton. In salting, he thought that excellent results were obtained by using 4 grains of iodide and 2 grains of bromide per ounce. A collodion so prepared, and kept six months, would give good results. Such a collodion might probably be horny and repellent when first made, but when kept six months, on the plan recommended by Mr. England, its physical qualities would be found to be satisfactory. If the collodion were required for immediate use, he would recommend not more than half a grain of bromide to the ounce. Such a collodion would work when fresh better than one containing 2 grains per ounce. Again, if that containing half a grain were kept for an hour after exciting, the result would be stained and useless, whilst that with 2 grains would, under similar circumstances, yield a good negative.

Mr. **Henderson** asked if, in using a strong bath, Mr. Blanchard took care to have it well iodized.

Mr. **Blanchard** never iodized a bath at all, except by leaving a plate in for a short time.

Mr. **Henderson** had found a 35-grain bath imperfectly iodized give less sensitiveness than a 25-grain bath well iodized.

The **Chairman**, referring to the manufacture of pyroxyline, said he presumed that Mr. Blanchard would call a temperature of 150° or 160° high: what would he call a low temperature?

Mr. **Blanchard**: About 110°.

The **Chairman** thought that the best collodion could not be produced so readily from one kind of soluble cotton as from two kinds of distinct qualities, one made at a high temperature (say 150° or 160°), and one made at a much lower temperature. A collodion from a mixture of two such cottons gave, in his experience, a film with the best physical and chemical qualities. This idea was borne out by the empirical practice of many photographers, who mixed the collodions of different makers. Mr. Blanchard had stated that he was in the habit of using 4 grains of an iodide and 2 grains of a bromide. Did he consider that this gave the greatest sensitiveness?

Mr. **Blanchard** said this much depended on conditions. He would illustrate by describing a curious experiment. He once was trying a collodion containing 4 grains of mixed iodides and 4 grains of bromide of cadmium, against the collodion of an eminent maker, using an ordinary 40-grain bath.

The highly bromized collodion gave a feeble, foggy picture, whilst the commercial sample worked well, and gave a bright picture. He then increased the strength of the bath to 50 grains per ounce, and tried again. The highly bromized collodion now gave a magnificent picture, whilst the other was very much inferior, besides being less sensitive. He thought that this result was borne out by the practice of the Americans, who used much more highly salted collodions and much stronger baths than were employed in this country, as he believed Mr. Simpson would confirm him in stating.

Mr. Wharton Simpson said that both in America and on the Continent of Europe this practice prevailed.

The Chairman referred to an experiment with two samples of collodion, one salted with bromide only, the other with iodides only. They were treated in all respects the same, and exposed together with a twin lens camera. He found scarcely any sensible difference. The bath contained 50 grains to the ounce. Both plates were developed with iron.

In answer to questions, Mr. Blanchard said that a highly salted collodion and a strong bath unquestionably gave greater sensitiveness than the opposite conditions. He worked with a bath as nearly neutral as possible, containing, perhaps, from one-eighth to one-fourth of a drop of nitric acid to each quart of bath solution. He did not use mixed samples of soluble cotton, but one kind, made at a temperature of about 110°, with acids containing as much as would yield a cotton dissolving slowly and with difficulty.

Mr. Henderson thought it objectionable to mix the collodions of different makers, as the salts they contained might not harmonize, and he believed pinholes, &c., were often the result.

Mr. Blanchard said that if a collodion containing iodide of potassium were added to another containing much bromide, this would occur, as bromide of potassium would be formed, and would crystallize out of the solution.

The Chairman said it was nevertheless possible to mix the collodions of several of the leading makers with advantage.

Mr. Fitch, referring to the necessity of frequently strengthening the silver bath, asked if the evaporation would not keep up the strength.

Mr. Blanchard said of course it might; much would depend on circumstances as to the degree.

Mr. Henderson asked if Mr. Blanchard had tried glycerine in collodion.

Mr. Blanchard had, without much advantage.

Mr. Henderson found it valuable in preventing rapid drying of the film in hot weather.

Some conversation followed on a plan, mentioned by Mr. Henderson, for keeping plates ready coated with collodion ready for the nitrate bath, by placing them in an air-tight box containing a little ether and alcohol at the bottom. In answer to questions,

Mr. Blanchard said that a strong developer permitted short exposure, and was valuable, therefore, in instantaneous work. For instance, if a 7½-grain iron solution were used for ordinary work, a 30-grain solution on the same work would permit the exposure to be reduced one-half.

The Chairman asked if elevation of temperature in the developer would not answer better still.

Mr. Blanchard thought not. When working instantaneous work in a tent in summer, the temperature was always high enough.

After some further conversation on this point,

Mr. Blanchard said, in answer to questions, that he reduced the proportion of acetic acid as he increased the strength of the iron solution. For ordinary work he used a 15-grain developer, with 1 ounce of acid in 20 ounces of developer.

Mr. Henderson had found it useful to increase the proportion of acid in the bath, and decrease it in his developer. He always liked to use a new iron solution; it developed more rapidly, and gave greater softness.

After some further conversation,

Mr. Henderson described a plan whereby he had got very sensitive plates. He excited a plate and exposed it to light, washed it, treated it with a solution of an iodide, washed again, and again resensitized. The plate would then give fine and very rapid results.

In answer to a question as to the cause of films leaving the glass,

Mr. Blanchard said there were many causes: cotton made with strong acids, the use of an acid silver bath, and, above all, damp or dirty plates.

A conversation on the use of two baths followed, and on the modes of securing non-actinic light by means of orange chromo, by iodine in varnish, by means of cadmium yellow, &c. After some concluding remarks from the Chairman,

It was announced that the May meeting would be devoted to the examination of and conversation on specimens, which members were invited to bring, either of their own work or that of others.

It was also announced that at the June meeting Mr. Henderson would read a paper describing a simple method of getting crayon-like effects in photographs. The proceedings then terminated.

Talk in the Studio.

Re-development of an Image after its Removal by Nitric Acid.—A very singular experiment was described to us a few days ago by Mr. Fothergill. He took a collodio-albumen negative, and dissolved the image with nitric acid, leaving a bare transparent film. He then proceeded to treat it again with pyro and silver, by which the image was re-developed perfectly, as at first. This was repeated three times, the image reappearing each time with all its original characteristics, every marking, spot, or stain being reproduced as faithfully as the image, in its due gradation. This experiment bears some analogy to that of Mr. Young, in which a collodio-albumen negative was developed after fixation; but it is, if anything, more marvellous that after the action of nitric acid a latent image should remain in the collodio-albumen film, sufficient to initiate the perfect building up of a negative from the silver reduced by the developer.

Photo-Crayons.—We have received from Mr. Burgess, of Norwich, some very pleasing examples of Mr. Sarony's style of photo-crayon portraiture, with some novelty in the fitting, which may be found useful. The transparencies are backed with grey crayon paper, which, in addition to the vignetted hatching, has the high lights of the picture touched-in with white chalk. The novelty in the fitting consists in the fact that the grey paper is mounted on a white board, which forms a margin of about an inch and a half all round. The picture is backed with a piece of millboard, and then the whole is bound together at the edges with a metallic-surfaced paper like a passe-partout.

Mr. Sarony's Enlarging Camera for Producing Photo-Crayons.—Mr. Sarony's contrivance for enlarging is very simple. It consists of a piece of deal board with an aperture, and clips to hold the negative to be enlarged. This screws to the frame of any suitable window. A deal box, about eight inches square, constituting the camera, and holding the lens slides, is provided with grooves to slide on to the board just described. Quite distinct and separate from these is a very simple holder for the sensitive plate. It is a simple varnished panel of deal, with a grooved base, on which it stands, and by which, when in use, it is clamped to a table or stand. To focus, a plate of glass with a piece of white paper attached—preferably one of the photo-crayon hatched backings—is placed *in situ*, and, a satisfactory image having been obtained, the sensitive plate takes the place of the glass and paper, and the exposure and other operations proceed in due course. Any darkened room will of course answer the purpose. The table, on to which the sensitive plate-holder is attached, must, of course, be moveable, to suit different degrees of enlargement. It is wise to have apparatus of this kind always at hand ready for use, by which means a transparency may be produced in a few minutes before a sitter leaves the studio, and an extra order by such means often obtained.

Ghost Photographs.—The vitality of imposture is very remarkable. The impudent and absurd cheat known as ghost photographs, introduced some years ago by knaves, or fanatics, or both, and so readily pointed as imperfect results due to natural causes, does not seem to be quite dead. The New York correspondent of the *Philadelphia Photographer* says:—"In one of our city daily papers, whose editor or reporter is as ignorant of photography as is a zoophyte of the mechanism of a watch, much has of late been said about the long-since exploded humbug of ghost photographs, thereby adding largely to the profits of dealers in this simple outrage upon the credulous and unsuspecting. Mr. Mason visited one of these fellows lately, but he knew too much to find out anything—they would not work for him or while he was there. Mr. Mason exhibited three cartes-de-visite made by one of these accommodating dealers in the mysterious: one of an elderly maiden lady living in this city, one of a gentleman who had been 'sold' with his supposed grandmother by his side, one of a lady who had been 'done for' in like manner with her mother by her side—all strangers. By a curious combination of circumstances, it was discovered that the elderly maiden lady was grandmother to the gentleman and mother to the lady—both of which parents were, of course, dead. It is beyond doubt, that both the spirits or ghosts, so termed, are from a positive of the aforesaid maiden lady. Barnum was more than half right when he stated that the public required to be humbugged, and he believed he had as much right to administer the dose as any one else. Their method of production being no novelty, I forbear entering upon details."

Blackening Brass.—For restoring or forming a black surface on the interior of lenses or other brass tubes I can find nothing better than the following:—Make a saturated solution of copper and nitric acid; put this upon the surface to be blackened, and apply sufficient heat to burn the solution off, or turn it black; brush off any particles which may adhere to the surface, and you will have a dead black surface that will not reflect light, nor rub off. Sometimes it may be necessary to apply several coats, but it can be done in a few minutes. Of course this recipe will not do for tubes that are soft-soldered, but for others it is perfect.—*Philadelphia Photographer.*

To Correspondents.

H. R. S.—You can, by searching the books of the Registrar at Stationers' Hall, ascertain whether any special picture is registered, but the task is a troublesome one. 2. You can register your copy from a painting, but taking steps to secure the copyright in your own copy is not a protection against others copying the same thing, unless the painting is copyright. 3. If you copy a picture which at the time is not registered, but which is registered afterwards, you are not answerable to the law for the copies sold before the original was registered.

J. T. (Markinch).—The foggy deposit, which can be removed with the finger, is not unfrequently due to the developer, which contains insufficient acid. We have known it occur from the use of a sample of iron for the developer containing free sulphuric acid. Sometimes it arises from the use of impure acetic acid. It may arise from the presence of organic matter in the nitrate bath; in which case, neutralise and sun. 2. The transparent spots or pinholes are probably due to the bath being over-iodized. The proportion of iodide of potassium you add is more than is necessary. Dilute with an equal bulk of distilled water, filter out the deposit, and add silver to make the solution the proper strength.

K. Hearn.—The strength of the nitrate bath was originally fixed at 30 grains per ounce somewhat empirically, but for simply iodized collodion it was found to answer well. Since the introduction of bromides into collodion, 40-grain baths have become general; and, in cases where bromide is used in large proportion, even stronger baths are found desirable. The reason for this is, that the conversion of the bromide in the collodion into bromide of silver proceeds more slowly than the analogous process of forming iodide of silver, and is imperfectly performed in a weak bath. The only disadvantage of an unnecessarily strong bath is, that it renders great care and neatness in manipulation necessary to prevent stains and to avoid over-intensity. 2. There are both glass and india-rubber tube syphons made for emptying large baths containing silver solutions. 3. The only disadvantage of adding collodion to the bath, for the purpose of iodizing it, consists in the fact that it is a voluntary addition of ether and alcohol to the bath, which accumulate quickly enough, or, rather, too quickly. 4. The only advice of any service which we can give you in regard to stops is always to use the largest which the subject will admit of. This can only be ascertained by examining the image on the ground glass. Begin with the largest stop, and, if the edges or some important portions of the picture are not well defined, try a smaller, until satisfactory definition is obtained; but never using a stop in the slightest degree smaller than is necessary to secure good definition. 5. We have seen wet plates placed after development into the empty grooves of the box of clean plates, but would prefer the safety of a separate box. 6. There is no simple rule by which you can determine if more iodide or bromide is required in the collodion; it can only be determined by judgment, based upon experience and observation. If the collodion contain insufficient salts, it will yield a blue or opalescent film, on coming from the nitrate bath, instead of a creamy one, but insufficient pyroxyline will produce nearly the same appearance. Excess of contrast or a tendency to comets suggests that more bromide would be an improvement. In adding more salts to iodized collodion, they should be added direct, or first dissolved in the smallest possible proportion of alcohol. 7. As a rule, neutrality is the best condition for a bath.

J. T. B. (Lydd).—The deposit of the gold upon the back of the prints, turning it pink, is a troublesome difficulty, the precise cause of which is not always easy to discover. There is no cause for it that we can see in the paper of which you send a sample. It appears to be very good paper. It is possible, however, from the time you mention, that it remains too long on the silver bath, the whole texture of the paper, in such case, becoming saturated with the silver solution. This, the free nitrate in the paper, might, in some cases, cause a reduction of the gold at the back of the print. Occasionally this deposit will occur when the toning operation is conducted in daylight, which induces a general reduction of the gold. Sometimes it will arise from excess of alkali, or from contact with organic matter of some kind, which has a reducing action on the gold. If the chloride of gold be neutral, the use of very hot water will sometimes produce a similar result. 2. A view lens will frequently answer better than a portrait lens for taking large groups; we cannot tell you of what focus without knowing the size of the picture required. To best accommodate the lens, arrange the group in a curve; to produce the best pictorial result, break the large group into a series of small groups, all arranged so as to form part of one general composition. 3. We cannot tell you of any one who supplies cloud negatives for sale.

J. D. M.—The plan described by Mr. Hughes for producing pure water is based on the assumption that the water to which the plan is applied contains only the ordinary impurities present in water employed for household purposes. Such water, when nitrate of silver is added and made alkaline, will have these impurities precipitated by the action of light. The amount of silver necessary to throw down all the impurities present will of course be determined by the amount and nature of the impurities. The impurities present in common water are chiefly carbonate and chloride of lime, with sometimes a trace of sulphate, and occasionally other salts, and organic matter. It is a very difficult thing to say absolutely when water is pure. It certainly is not pure enough for photographic purposes—that is, for making a silver bath—so long as it throws down a white precipitate on adding silver. It is not necessarily quite pure when it throws down no precipitate; but this, as a rule, is a fair test. 2. No bromide is added to the iron developer by Mr. Gordon. If necessary, in summer, he would, we presume, add more acid. 3. When iron and silver are used for intensifying, more detail is generally obtained, as well as more intensity. 4. It is quite safe, after development is completed, to bring a negative into the light to fix. We shall be glad to see the proofs of your gum plates when ready.

Nemo.—Description of mechanical arrangements is always difficult to make perfectly intelligible, unless both describer and reader have clear perceptions in relation to mechanical combinations, or many diagrams are used. If you will state in what point you are in difficulty in reference to our correspondent's description, we will endeavour to help you.

Pickwick.—We have described several processes of enlarging on canvas for oil colouring. You will find two very simple methods described on p. 179 of our last Volume, the number for April 9th, 1868.

Excelsior.—In our last Volume you will find various modes of double printing described. You will also find instructions in Mr. Cherrill's paper, read before the Photographic Society, and published in our columns at the beginning of the year. We cannot give you detailed instructions in this column, but may just briefly state that, having chosen your landscape background, you mask a portion of it with a piece of blackened paper, carefully cut to the outline of the figure, and mask the figure negative in all portions where the landscape is to appear, and then print the two negatives in succession.

M. H. G. (Parlington).—Thanks. In our next.

A. H. Wardlaw.—Thanks.

Thos. Gaffield.—The parcel duly received. Thanks. The enclosure shall be duly forwarded.

J. M. Burgess.—Received. Thanks. We will forward one of the pictures as desired.

Errata.—The writer of the *resume* of operations in the photo-crayon process of Mr. Sarony calls our attention to two errors in the printing as follows:—"In front of the lens place a board on a stand that can be moved backwards or forwards, with pins," &c. The pins have nothing to do with the moving of the stand; they are merely used as supports to rest the plate and focussing-screen on. The other error is of more consequence: "With a hole in the middle about 2 inches long by 1½ inches wide," and the printer has made it 17 instead of 1½.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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PHOTOGRAPHY WITHOUT A DARK-ROOM.

The one especial advantage which dry-plate photography possesses over the wet process is convenience for field work. The portability of the appliances constitutes the great charm of the former. With an equipment for working wet plates, the photographer will not dream of going out without intending to devote himself absolutely to photography; whilst with every appliance for securing half-a-dozen dry plates, the impedimenta need not interfere with the fullest enjoyment of a day's trip, or a month's travel. But these considerations apart, dry-plate work has many disadvantages and drawbacks. The highest praise which can be awarded to its results is, that they are "scarcely inferior to wet plates." Except in the most skilful hands, there is much uncertainty in dry processes. In the most skilful hands there is always a degree of uncertainty as to the nature of the result, and whether it possesses special qualities much to be desired in dealing with the subject. The wet process is, on the other hand, simple, easy, and certain, or, at least, it affords facility for acquiring certainty of the result without leaving the spot.

All this being so, is it not a little marvellous that so little of the ingenuity and perseverance of photographers has been directed to means of working wet photography in the field without the burdensome appliances of dark tent or manipulating box? The subject has received some little attention, and one or two attempts have been made to introduce such a system; but, on the whole, it has been strangely neglected. Mr. Archer, who was the first, of course, to use a wet process in the field, contrived a manipulating camera, and worked it with fair success. Some others have made similar attempts. Upwards of ten years ago Mr. Barrett gave a full description in our pages of a most complete and ingenious field apparatus, in which wet plates were worked without tent or manipulating box. The plate, having been coated with collodion, was transferred to the nitrate bath, from there to its groove in the camera, and thence to the developing bath, without ever seeing the light. The complete equipment of baths, camera—in fact, everything required for working wet plates, except the tripod-stand—was packed in a box 12 inches in height and breadth, and 7 inches in depth: such an equipment working plates 7¾ inches by 5¾ inches. For smaller plates a much smaller equipment answered every purpose. We have seen Mr. Barrett's apparatus, and seen excellent negatives produced therein. As the description was full and minute, and freely illustrated with diagrams, and as Mr. Barrett has more than once offered to show the apparatus, it has surprised us that such a system has not come into more general operation, or, at least, that it has not received more attention.

After a long interregnum, in which this mode of working had seemed to have dropped out of notice altogether, we have received two communications, within a few days of each other, reviving the subject. The first was from an amateur correspondent in Yorkshire, whose communication, with diagram, appears on another page. In all cases the principle of working is somewhat similar. A plate somewhat longer than the negative required is used, so as to leave a portion uncoated, to facilitate the various transfers the plate undergoes. After coating, it is transferred to a holder which permits it to be dipped into a bath, then placed in position for exposure, and next placed in a dipping-bath, containing iron solution, for development. Betwixt each of these operations the plate is drawn up in a small dark chamber, so as to effectually protect it from light during its transfer from one position to another. In the apparatus of our Yorkshire correspondent, as will be seen, the bath is placed below the camera, underneath the groove, for exposure, and the plate is withdrawn from the bath into the groove previously occupied by the ground glass upon which the image has been focussed, a black bag, lined with yellow, shielding the plate during its transfer from one position to another. It is unnecessary to repeat the details, which will be found on another page, but we may call attention to the fact that our correspondent states that he has worked with such a camera as he describes with perfect success for several years.

The second communication is from Mr. Whiting, who is, we believe, by profession a surgical instrument manufacturer, and whose experience, therefore, pre-eminently fits him for contriving the ingenious mechanism required in carrying out his aim to prepare himself an equipment for field-work without the need of a dark tent. His apparatus was first made, we believe, some years ago, but has not hitherto been definitely brought under the attention of photographers. So far as we can judge from a cursory inspection, it appears admirably neat, and perfectly adapted to its end. Mr. Whiting's full description, with diagrams, will appear in our next. It is unnecessary for us to discuss the differences or respective advantages of the two contrivances; but we may remark that, as Mr. Whiting's manipulating camera is, we understand, to be introduced to photographers commercially, it will meet the wants of those who do not care for the trouble of making, or causing to be made, the necessary additions to their own cameras.

One or two interesting questions in regard to manipulation will necessarily arise in relation to this subject. The system of development by means of a dipping-bath of iron solution, which used to be a favourite plan of some operators, has long passed out of use, and many photographers in the present day will be disposed to ask, is it possible to develop a negative successfully in this manner, and is there not great risk of over-development? There are advantages and disadvantages connected with the system. The primary advantage consists in the freedom from risk of stains from the irregular flowing of the iron solution; and the second advantage is a general tendency to harmonious development in cases where otherwise a tendency to excessive contrast might exist. The free nitrate in the plate being at once diluted with excess of iron solution, there is little risk of over-intensity, or of over-development. In cases where a tendency to lack of force or vigour in the negative exists, this, of course, becomes a disadvantage, which may, however, be overcome by after-intensifying. Another disadvantage arises from the fact that the developing solution in the dipping-bath is used over and over, and, of course, it loses reducing energy each time, and also accumulates silver, which, unless judgment be used, produces a tendency to hardness. This difficulty, however, might be met by using a dipping-bath requiring a small quantity of iron solution, and renewing it wholly or in part for each plate to be developed. The operation of development, if necessary, can be watched by using a bath of yellow glass; but this, we apprehend, as a rule, will not be necessary, as if a suitable solution be used, the plate may be left in it for any length of time, without much risk of over-development. Mr. Whiting assures us that he has never felt any difficulty on this score.

The operation of fixing may be performed at home, and, if necessary, of intensifying either before or after fixing. If a box with well fitting-lid be used, plates will remain moist for many hours; and, where it is necessary, it is easy to coat them with glycerine, or, what is better, with golden syrup and water, as we have before described.

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NEW AND OLD IRON DEVELOPERS.

We recently had occasion to correct an error in a contemporary regarding the operation of new and old iron developers, especially referring to the action of persulphate of iron. The opinion of Mr. Carey Lea was quoted, both by ourselves and our contemporary, as an authority who had given the subject of development much attention. Since the close of the controversy, Mr. Lea has written to our contemporary, confirming our view of the case. We refer to the matter now, not with any view of renewing the discussion, but for the purpose of quoting the remarks of Mr. Lea, in the last number of the *Philadelphia Photographer*, on the subject, in which the action of the iron developer is very clearly restated:—

> An animated discussion has been taking place on this subject, as to whether an old or a new developer tends to softness and detail on the one side, or harshness on the other.
>
> Whatever influences in development tend to softness will, if exaggerated, tend to fogginess; and whatever helps brilliancy will, if exaggerated, produce harshness, because harshness and fogginess are the extreme terms of development.
>
> An abundant quantity of acetic acid in the developer always increases the brilliancy of a picture (of course, at the expense of softness), and increases the danger of harsh contrasts. As age in the iron developer acts very much in the same way as acetic acid, its tendency must undoubtedly be held to be unfavourable to softness.
>
> There was a time when brilliancy was the one great thing sought after in negatives. The blacker the blacks and the whiter the whites the better; so, too, we think now; but formerly this was the great thing; now this is by all good operators held to be of less importance than the production of plenty of half-tone. The best photographer will always be he that succeeds in combining a large quantity of half-tone with enough of deep shadow and high light to bring the half-tone fully out.
>
> A perfect picture, as respects gradation, is one that shows plenty of half-tone with, just at the deepest point of the shadows, full black, and, at the highest point of the light, pure white, together with all degrees of half-tone. As soon as the pure white covers more than a very small spot, it becomes chalky; as soon as the deep black does so, it looks like court-plaister.
>
> Those who cannot manage their baths and tend to foggy pictures will always like old developers, because these enhance the brightness of the picture. Those who keep their baths in first-rate order will like a nearly new developer, on account of the better distribution of the deposit of silver which it gives, and the greater harmony of effect. It is an annoyance to have a developer that is continually changing in this way. For this reason the sugar developer is very satisfactory, as it operates from the first like a developer mixed just long enough, and continues for a long time to give exactly the same results. The formula which I have given in my manual is one that I have used exclusively for a long time.
>
> As in the course of this controversy both parties have done me the honour to cite my expressed opinions in support of their views, I take this opportunity to say that I have never entertained any but one view, and that I have expressed very frequently and pointedly; viz., that rapid developments of wet plates tend to softness, and slow ones to harshness. This has been said by me so very clearly, that I am wholly at a loss to understand how I can possibly be cited as holding any different opinion.
>
> In fact, the only quotation made by the *British Journal* is one from an article that appeared in its own columns, in which the sense of the passage is entirely destroyed by the substitution of the word "stiffness" for "softness," as I wrote it. This typographical mistake was so completely contradicted by the context, that it seemed hardly necessary to correct it; I, nevertheless, did so at once.

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OWNERSHIP OF THE NEGATIVE.

We recently noticed the decision of a German case in relation to the proprietorship of the negative. In reference to some remarks on the same case, by the editor of the *Journal* of the Society, Dr. Liesegang writes as follows, in further explanation of the facts of the case:—

"Elberfeld, March 20th.

"My dear Sir,—Allow me to draw your attention to a statement respecting the Cleves Negative case which requires attention. The photographer in question gave an invoice covering (1) the taking of the views, and (2nd) the prints from the negatives obtained. He did not name or specify the negatives in his invoice. The proprietor of the chateau was condemned to pay for both, a deduction from the price only being allowed; and after having paid the photographer he asked him to hand over the negatives, or to return him so much of the amount as he had been required to pay under the first head, viz., for the taking of the views. The general practice here, in such cases, is that the photographer charges a certain sum, say £1 or £2, for the production of the negative, which then remains in his possession, and the prints are paid for extra at a specified rate. If the customer wishes to become proprietor of the negative, he can purchase it at a certain price, paying usually one Frederick d'or (about 17 shillings) for a whole-plate negative.

"Some analogy may be found in the lithographer's business. I do not think that he can be compelled to give his stone to the customer who orders of him one hundred cards, although I remember that M. Susse, of Paris, sent me, with the address cards ordered of him, the copper-plate from which they had been printed, without my asking for it, or his making any charge for the same. In order to avoid troubles like those of the Cleves photographer, it would be better to charge for the *first print* instead of the negative.—I am, yours, &c.,

"Dr. Liesegang."

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BRAUN'S FACSIMILES OF DRAWINGS, ETC., BY THE OLD MASTERS.

BY WILLIAM BLAIR.

I had lately a rare carbon treat. Having been favoured by a visit from Mr. Boyces, the active Secretary of the Autotype Company (Limited), in the course of his peregrinations through Scotland, in company with another very excellent person with whom he has contracted a different kind of partnership—viz., unlimited, and for life—he courteously invited me, along with my better half, as we sometimes in Scotland designate the life-director ot our domestic affairs, to the hotel where he had made good his quarters for the night, to examine his albums, and see what was doing at home and abroad in the carbon department, not of the black, but of the celestial art. The opportunity was, of course, too good to be lost, and, as I have said, a rare treat was before us.

The specimens in the large albums consisted chiefly of facsimiles from the drawings, sketches, and etchings, &c., of the old masters of pictorial art, picked out and selected from the museums and repositories of art over the Continent of Europe, and photographed in pigments corresponding in colour to the different chalks and pencils used in the original drawings. These facsimiles were executed by, or under the superintendence of, M. Braun, of Dornach, the assignee of Mr. Swan's patents for France and Belgium. There were some hundreds of them: some after Raffaelle, some after Titian, and Rubens, and Michael Angelo, and a host of others whose names have been carbonized in the book of time. What a treat, for any one with the feelings of an artist, to see and study these masterly sketches in their infinite beauty and variety of subject and style! Some of them may be coarse in the touch, but there is a life in them that is seldom realized in the soulless productions of the modern camera, notwithstanding all its pretensions to the faithful delineation of what is real and true.

The camera cannot select, and unless its master do this for it with taste and skill, its productions cannot rank among the fine arts. The lighting and shading of some of the heads and figures in these sketches are often very remarkable and striking, the rotundity produced, in many cases, approaching to the palpable and solid. No doubt many of our first-class photographers have given these matters their serious study, and they cannot be too strongly recommended to the study of all who have any ambition to produce things worth looking at. Mr. Boyes had also along with him specimens of carbon prints of all sizes, from life negatives and from landscapes, of the highest order of excellence, showing what the carbon department is now capable of doing in pictorial delineation of every kind. I understand that agencies are being established in this country for the sale of these hitherto almost inaccessible, and yet invaluable, productions.

We wandered for two hours over one of Mr. Boyes' well-filled albums with very great delight, venturing a little criticism now and then in a small way, and noticing with surprise the easy touch with which, in many cases, very remarkable effects were produced. But when, near midnight, he brought forth another album as large as the first, we really found that at that time we could not do justice to it, and we had to cry out, "Hold—enough!"

What I wish here specially to notice is, the circumstance that in these reproductions the carbon has really far outdone the silver. Not merely are the impressions more permanent and reliable, but, in effect, they are far more satisfactory. Mr. Boyes had some silver prints—very fine ones, too—of subjects contained in his albums, and when we compared the two impressions, by placing them in juxtaposition, there could be no doubt that the silver was far inferior—inferior in force, inferior in tone, inferior, as we had reason to believe, in strict resemblance to the originals, and inferior, decidedly inferior, in its general appearance, from its obtrusive glaze.

I have often thought, perhaps sometimes said, and am here inclined to repeat, after what I have now seen, that the days of silver printing, as a great branch of national industry, are numbered. I have endeavoured sometimes to warn those who cling to it, that they are holding on desperately and doggedly to a sinking ship. I am more disposed than ever to do so now. The doomed vessel may not be destined to founder in a storm, but it will go down quietly, like the "Royal George," in peaceable waters, with all hands on board, and deposit them softly, if not safely, in the mud at the bottom. The sails and cordage, and the very timbers, are rotting and crumbling away, however imperceptibly, and the end cometh, if it be not already very nigh at hand. I would once more, therefore, endeavour to raise a faint, feeble cry over the broad, sunny kingdom of Camera, and say, Why, ye men of skill, intelligence, learning, science, good sense, and worth, why will ye persevere in filling the world with things that literally perish in the using?—why persevere in wasting gold and silver and your precious time and labour in turning out, by the million, beautiful toys that come like shadows, so depart?—dissolving views that pass away under your very eye, and leave nothing better than a wreck behind? If such conduct was excusable when you had nothing better than evanescent matter to work with, the excuse is now taken away. Permanence, or something approaching to it, may now undoubtedly be secured in combination with excellence. You have now materials in which you may hand down to the next generation—and, peradventure, a little beyond it—the stamp and characteristics of the present times, the beautiful in art, and the select in nature; and who is it that lays himself open to the charge of infatuation, if these great and important advantages are obstinately ignored, or respectfully declined?

Gentlemen, one word more—as our preachers sometimes say—and I have done. Depend upon it (excuse me speaking dogmatically on this point), depend upon it, in this matter, it is good to be what some people—wishing, of course, to be complimentary—call *carbon mad.*

Bridgend, Perth, April 14*th*, 1869.

THE VELOCIPEDE APPLIED TO PHOTOGRAPHY.

BY DAVID WINSTANLEY.

The wide-spread mania for bicycle velocipedes, and the approach of the out-door photographic season, suggestive as it is of long walks and apparatus more or less cumbersome, naturally cause the mind to revert to the question which has oftentimes been asked, "Can the velocipede be made of service to the travelling photographer?" The two-wheeler, elegant and graceful as is the appearance it presents when managed by a skilful rider, possesses, in itself, too little stability to lay any great claim to the notice of photographers. The "fancy few," no doubt, would find little difficulty in carrying a camera, dark slides, and tripod with them upon this construction of velocipede; but the "wary wobblers," and even a goodly number of those who, on a hard and level road, might lay claim to be classed amongst the "go it gracefuls," would find the photographic impedimenta decidedly inconvenient under such a system of locomotion; and a single fall (though, under most circumstances, of no moment to the rider) would most likely prove other than advantageous to the apparatus.

The three-wheeler, on the other hand, being a much more steady-going sort of an arrangement, especially when plenty of room is given between the hind wheels, is sufficiently free from the objection of liability to turn over. With many forms of three-wheelers now in use it would seem likely that the locomotion of an out-door photographer could, on good roads, be performed with less fatigue than on foot. That form of tricycle which enables two to ride, the one upon a saddle over a large driving-wheel, and the other on a seat between the hind wheels, would, with a few special arrangements, probably be found more useful than any other variety, as the operator with his friend or assistant could both go out together upon the same machine, upon a minimum number of wheels, and carry their apparatus conveniently and safely. As a 10 or 12-inch stroke seems to have been found in practice to be most convenient, 5 or 6-inch cranks would no doubt be most generally useful; and, with a 3-foot wheel in front, and 18-inch wheels behind, more especially if the latter could be worked in conjunction by both riders at once, any ordinary upward inclination of the road, in even a moderately hilly country, could be ascended without the desperate efforts which, with large driving-wheels only, are so frequently and so fruitlessly made. Upon a level road, or down a slight incline, the 3-foot wheel would enable the operators to move with considerable speed. It is my intention to have such an arrangement constructed for my own use, for it seems to me to be an idea capable of being carried into useful effect, which, I think it will be admitted, is more than can be said, for photographic purposes, of the bicycle, in spite of the pleasure experienced in its delicate balancing.

The immense superiority, however, of a machine capable of self-movement will at once be evident. The application of steam is attended with all the inconveniences of firing-up, carrying fuel, &c., and, moreover, subjects the vehicle to which it is applied to the regulations of a special Act of Parliament, by which the speed is limited, and, as I understand, the rate of tolls rendered enormously high. The application of powerful springs actuating the wheels would rid the machine of these objections, if, as I am informed, such springs could be constructed of sufficient power to carry the machine a number of miles, and be slowly wound up at convenience by a boy. Still, however, even springs do not seem very likely to possess such advantages as will enable them to supersede the hands or feet.

There is, however, one source of power which has surely been much overlooked, and which men of a scientific turn of mind, as I contend photographers generally are, would, one would suppose, take some amount of interest in successfully applying. I allude to carbonic acid. This substance—one of the products of the combustion of a common fire, the body liberated during the effervescence of various beverages, and from mixtures, with strong acids, of the alkaline or alkaline earthy carbonates—is, under ordinary circumstances, a gaseous body. By the application of a sufficient pressure, especially under the influence of a low temperature, carbonic acid gas is condensible to a colourless mobile liquid, which, at a temperature of 30° C., when confined in a vessel, exerts, through the tension of its vapour, a pressure of 73·5 atmospheres, or over 1,000 lb., upon every square inch of the enclosing vessel.

The condensation of the carbonic acid from the gaseous to the liquid state may be effected by the use of a force-pump; but this, of course, requires, in addition to the amount of force necessary to overcome the friction of the pumps, exactly the same expenditure of mechanical power as the condensed carbonic acid is capable of affording by its subsequent expansion. This means of condensation, therefore, would be impracticable where carbonic acid is to be used as a source of, and not as a reservoir for, mechanical power. The apparatus, however, used by experimental chemists, which consists of a generator for carbonic acid gas, connected by tubing with a receiver for the liquid obtained under the pressure so produced, and transferred, in the main, to the receiver, by applying heat to one vessel and cold to the other, would be the form of apparatus most likely to answer the present purpose.

The mechanical force obtainable by the expansion of the carbonic acid gas would require the use of a steam-engine for its transference to the driving-wheels of the conveyance Working this engine under the full force of the gas, its construction would need to be unusually strong for its size, which would, however, be as unusually small for the amount of work it would do; comparatively large cylinders working at a lower pressure could, of course, be used. The carbonic acid might be prepared at convenience at home, and kept in strong cylinders ready for attachment to the vehicle; or it might be prepared as used on the journey, especially when a low-pressure engine is employed, by permitting a stream of hydrochloric acid to pass from a lead-lined vessel placed behind the seat into another lead-lined vessel containing oyster-shells, marble, or other form of carbonate, placed beneath the seat. Oyster-shells, chalk, and marble are all inexpensive materials, as is also hydrochloric acid, which may be obtained retail at a penny a pound, or in larger quantities at a merely nominal figure, inasmuch as it is one of the waste products of the chemical works. The chloride of calcium obtained by the solution of the former in the latter might be found to be utilizable to some extent in one way or another, and thus the carbonic acid used to propel the machine be obtained at a very trifling cost.

The use of a couple of naphtha lamps beneath the "steam pipe" just before it enters the cylinders would greatly increase the expansive force of the gas, without adding materially to the cost, the trouble, or the danger of the apparatus; which danger, by-the-bye, with properly-constructed generator and engine, would be no greater than that attending most everyday occupations. With this suggestion I take leave, for the present, of the application of velocipedes to photography.

THE PAST, PRESENT, AND FUTURE OF PHOTOGRAPHY.

BY W. T. BOVEY.

Past, present, and future are words easily spoken or written, yet how rarely is the essence of their signification imbibed by the world's busy throng! But few ever give themselves sufficient time to learn the curious fact that life is but flashes of existence which expire at the instant of their birth, and that the "tick, tick," uttered by the ever-watchful clock are unwearying records of life become death—that each ticking sound is life's testimony of its brief existence, written on the tablets of memory; hence we perceive that life, as we understand the term, is but a graduated recollection of the past, and an indulging in dreams of anticipation which outstrip the flight of time, and enable us to live in advance of our actual existence. Although, to such as have performed their part in life aright, the past may be viewed as a mine of richness, the future is the chief goal towards which the eyes of the great majority of men are turned, and the mirage pictures that are conjured up by hope form the grand lever which excites men to noble action and untiring perseverance. Our everyday necessities provoke industry, but prospective advantages prove an attractive force which hunger, thirst, fatigue—nay, even the threatenings of death—cannot rob of its power; it is a force which shapes the course of genius, that moves the wheels of progression; in a word, it forms a mighty corner-stone to the grandly constructed fabric of civilization.

Beyond all other places, the fireside is the best adapted for silent contemplation, for there the curling smoke, as it ascends the dancing flame, and the ever-changing forms assumed by the glowing embers, each acts as a sedative which soothes the mind and erases from it the harassing sensations produced by the day's occupation. Under such favourable conditions a book becomes a pleasurable companion, and its contents often supply food for quiet cogitation.

Here I pause to change the current of thought, lest time and space should fail me in giving expression to the further remarks I have to offer on the past, present, and future, no longer in a general sense, but as it bears on the subject of photography.

A brief view of the past, as it applies to the rise and progress of photography, cannot but excite in the mind of the beholder feelings of astonishment seasoned with admiration, when we consider the humble origin of the revolutionizing art, and trace from thence its marvellous course through ramifications of varied applications which have made photography an indispensable handmaid to art, literature, and, added to these, the sciences. The painter asks its aid to shorten his labours; the writer calls into requisition its unmatched descriptive power; whilst science bids it reveal the secrets of the resplendent orb which gave it a being. Surely it might with truth be said of photography that it has no parallel, not only with reference to its rapid growth from youth to giant manhood, but also for the vastness of its accumulating strength. A few years ago, and the draughtsman's art was the only existing means by which paper or canvas could be made to repeat the human form and features. The dearth of skill to execute such works of art occasioned a scantiness of production, and none but the rich could afford the luxury of making acquaintance with unborn generations. But the advent of photography produced a revolution which surprised whilst it enlisted the unanimous patronage of the world, and kings, queens, princes, nobles, and cottagers hastened to visit the photographer's studio. Those were glorious days for the followers of the black art. Busy days and nights brought brightest visions. Gold has flooded the coffers, and more will come to-morrow, and to-morrow still the tide will flow, and our cry shall be, "They come! they come!"

A fever that topples over the usual course of nature cannot continue; over-exercise must be followed by reaction. The popular demand for more, more, soon attracted the attention of hundreds of those knowing ones who are ever on the alert for some good thing to turn up. A few pounds sufficed to start them on the golden route, and, as they took a share of the sunshine of prosperity, it is to be feared that too many among them acted fully up to the fallacious yet seductive adage, "Let us eat, drink, and be merry," for this good thing we have found must continue for ever. Young people must grow old, and babies will never fail. The world loves to see itself repeated in all its stages, and sure the world will never die. True, the world does not die out; young and old continue ever. But we belong to the generation which is passing with us, and be it remembered to us was given the advantage. We started on terms the most promising, for we form part of a generation which has seen the birth of photography; hence the feverish mania of portrait-taking which seized upon the public mind. We have not to look far back into the past to see the beginning; yet we live in time present, when the once great demand for photographs has sobered down to those reasonable limits which confine the action of every long-established trade and profession. Had Madame Rachel's process of making folks "beautiful for ever" been known by numbers, the lower world would doubtless desire beauty if it could be purchased at a reasonable price, and the many professors would for a season reap a golden harvest; but when all had undergone the beautifying manipulations, the supernumerary hands would be forced to retire from the field of action, which would be left to those best qualified to beautify, and he who could make most beautiful would, at all times, command the most remunerative trade. Apply these remarks to photography; they will dovetail with it strikingly.

The rapid transitions which have been experienced by photography are occasioned by the art's wondrous powers of accumulation; in other words, its extraordinary run of prosperity has been crushed by the cause which provoked prosperity. Rapidity of production insured cheapness; cheapness created popularity; popularity demanded enormous productions; and the immensity and facility of production soon caused glutted repletion. Hence the earliest past of photography, commencing with fortune's best smiles, gradually glided into the gloom which marks its present position—a gloom which to some appears as the forebodings of extinction to the art as a remunerative profession.

To those who are wont to indulge in such desponding thoughts I would say, Never despair! Had we been farmers with stock in hand vastly in excess of the world's demand, we should suffer much in the same way as we suffer now; or had we been weavers, leather-dressers, or engaged in production of any kind, we would always find an over-stocked market causing depression among that particular class of surplus producers. Depend upon it, the world is not tired of photography. With the fostering care now bestowed on the art it must—it will—command a brilliant future. Adversity is, I believe, its best friend, which will place it ultimately on a surer and more satisfactory basis. A weeding process has for some considerable time been in active operation, and the unsightly limbs which weaken the soil from whence they would draw nourishment are one by one pruned away, for adversity is a keen agent for sharpening men's wits. Those who have ventured to occupy a holding on ground which nature did not shape them to adorn will soon cease to be trespassers, whilst those who, in the practice of photography, have found congenial occupation, will be stimulated to struggle with present troubles, and forget them in the race for excellence; thus from present adversity future weal will spring, and the weeding out of the cumberer of the ground will so far subdue accumulation as to bring production on a more equal balance with demand.

And with the improvement of the art will come the reduction of its producers. I would earnestly recommend that excellence and remuneration should enjoy a just proportion. If the art is to prosper, it must remain in the hands of respectable practitioners; and when it ceases to give a respectable living, respectability will leave it, as many of them have left other businesses, simply because it did not pay. I must, however, reiterate, ere I lay aside my pen, Depend on it, good times to come await our art.

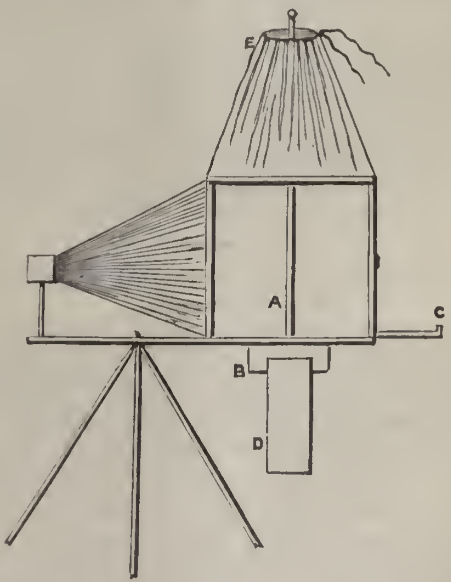
Here I conclude, as I find my thoughts gliding towards the subject of a relief fund, on which topic they shall in silence have free rein; and I promise particulars in my next musing jottings.

A MANIPULATING CAMERA FOR WET PLATES IN THE FIELD.

[A correspondent favours us with the following description of a camera for manipulating wet plates in the field without tent or dark box.]

This camera is particularly recommended as portable and easy to manage, and well suited to ladies, who seldom like a tent or box. One great comfort is, that the head is not put under a black curtain, nor the arms held in black sleeves. Any sized camera can, of course, be made, but the larger the plate, the heavier every requisite becomes.

That I have used for three years is 5½ by 4, and the plates are 4¼ by 4¾. Inside the camera, at A, is a groove firmly fixed in the middle, in which the plate slides as in a plate-box. Each plate must be one inch longer than required for the picture. Under the camera is a deep groove, B, in which the bath, D, is placed; and at the two ends are pieces of copper hinged, so as to hold it firmly when in position, and they are raised to let it be put in and taken out. The slide, C, when pulled out, as in the picture, opens a slit in the bottom of the camera, under the grooves, A, and thus enables the plate to drop steadily into the bath. On this slide is fixed the focussing glass. There is also another groove fixed in front of this glass, into which a piece of blackened tin is inserted, to form a back to the plate while it is being exposed. The bag, E, is black silk lined with yellow; it is tied round the camera, and must be



long enough to enable the artist to draw the plate easily out of the bath, and raise it to its required height.

To take a picture, screw your camera on to the legs: you will observe the legs are very forward, to avoid the bath, and the camera must be perfectly straight. Attach the nitrate bath as at B. The slide, C, must then be pushed up, and the piece of black tin taken out, and you will find the focussing glass exactly fits into the place the plate will occupy; open the door at the back, and close the bag, E, by drawing the strings. Focus. This done, close the door, draw back the slide, and put the tin into its place. Take up your plate, fix an American clip firmly upon it lengthways, put on the collodion as usual, only you need not cover within an inch of the clip; when set, place it in the grooves, A, and drop it gently into the bath; close the bag, keeping the string round the top of the clip, so that when the plate is sensitised you can draw it out of the bath and draw it up, still shielded by the bag, high enough to enable you to push in the slide, A, upon which it will rest above the bath, and backed by the piece of tin. Expose your picture. This done, take off the nitrate bath, and replace it by the developing bath. Take the end of the clip and bag in your right hand, raise the plate a little, draw out A as before, and drop the plate into the iron bath. Throw the focussing-cloth over the camera and bath; in four or five seconds look under it, and you will see the picture through the yellow sides of the bath. When sufficiently developed, close the clip by pinching the ends together, always through the black bag; this will free the plate, which now rests in the bath; undo the bath carefully, the plate still in it, have water ready, take the latter out, and wash and fix as usual.

With a little practice all these operations are so certain and regular that no mistake can be made. The nitrate bath is of ebonite; the iron bath is of yellow glass fitted into a wooden frame varnished; they hold enough liquid for six pictures. I have a gutta-percha box, like a little trunk, that holds the camera and baths. The camera on one side of the focussing-glass carries a rack with six glasses, on the other side two flat bottles, one of collodion and one of hypo solution. The lens lies on the top, also a flat india-rubber bottle for water, and the focussing-cloth. This box is easily carried in one hand, and the legs in the other. I have to thank Mr. Barrett for his kindness in naming the clip; I first used a silver holder, and, having to dip it into the iron bath, besides causing me much trouble in washing the camera, it often left a trace of developer, which spoiled the bath. When the lens is taken off, the piece into which the legs screw doubles back in front of the camera.

EXCITED PAPER TURNING BROWN.

BY G. H. FENNEMORE.*

I HAVE recently been asked a remedy for paper turning yellow. A gentleman says:—"We have had such a mild, damp winter, that I have been very much troubled with my paper, which in fine weather prints a fine purple tone, but in damp weather prints a disagreeable brick-red tone, at the same time turning very yellow, and is extremely hard to tone. Can you tell me a remedy for it?" The remedy is simply to know the cause. When a sheet of paper is floated on a solution of nitrate of silver, we have silver in presence of, and combined with, organic matter. This, when perfectly dry and kept in the dark, will keep for a long time without appreciable decomposition; but in contact with moisture decomposition goes on more rapidly and still more so by the aid of heat, whether solar or artificial, the paper turning yellow from the oxidation of the silver. Different organic matters decompose silver more or less rapidly, according to their nature. For instance, pyrogallic acid is one of the most rapid decomposers of nitrate of silver we have in the photographic studio; and yet crystals of silver and pyrogallic acid, if perfectly desiccated, can be mixed together, and will keep a long time without decomposition if sealed up air-tight. But add but a few drops of water, and in one minute you have a black mass of decomposed silver. It follows, then, that to keep paper white we must keep it dry, or, at least, as dry as the means at our command will permit. The reason your prints are so red in damp weather is owing to the influences of the organic matter contained in the paper, and their action upon the free nitrate of silver; for the chloride of silver, when acted upon by light, is a violet colour, and, if exposed long enough, finally becomes black. Albuminate of silver, on the contrary, prints a cherry-red colour, as do most of the gelatinous salts of silver formed in combination with the sizing of the paper. Finally, chloride of silver is much more sensitive to the action of light than either the albuminate, citrate, or gelatinate; also that paper is much more opaque when dry than when moist. If, then, we expose a print on a clear, fine day, it prints quick, and the impression does not sink very deep into the paper; the print thus produced is principally a chloride of silver print, and assumes more of the violet colour, slightly modified by the reduction of the albuminate; but when it is exposed on a damp, cloudy day, the printing is much slower, the paper becomes damp and semi-transparent, the light, consequently, penetrates deeper into the paper, thereby strongly reducing the organic salts of silver, which print red, before the feeble light has had power to penetrate the opaque parts of the negative, the resulting prints having strong contrasts and a foxy brown tone. For this reason, paper when damp prints much stronger than when perfectly dry, and this is a very useful hint. When the weather is very dry, do not perfectly desiccate the paper, but when the weather is damp, the paper should be dried before a fire or in a drying-box, as it will afterwards absorb sufficient moisture. The question then arises: How shall we keep paper in the best state of preservation during damp and hot weather?

My plan, and I think it very good, is as follows:—I have a tin box with a false bottom perforated with holes; in the bottom of the box is an 8 by 10 porcelain dish containing chloride of calcium. The paper should not be silvered a second longer than is necessary to produce the desired result; it should be hung up in a warm, but not too hot, drying-box, and perfectly dried. It should then be put in the chloride of calcium box, and kept in a dry place until wanted for use. I have two sets of pads for my printing-frames, made of thick felt used by piano makers. One set of these pads I steep in a saturated solution of chloride of calcium, and dry. In damp, or warm, muggy weather, I dry the calcium pads perfectly in the drying-box, and make them quite hot, to expel all damp. The paper is now put in the printing-frame, a piece of clean paper is placed over it, and, finally, the calcium pad, which by this time is cool. The print is exposed and put back in one side of the box till time to tone. In very dry weather I simply use the calcium pads without drying. In that state they are slightly damp, from the absorption of moisture by the calcium. I am seldom, therefore, troubled with yellow paper, and it is only occasionally that I have to use the pads at all, the box being generally sufficient. The pads containing the chloride will last a long time. They should be kept in a box by themselves, and should always have a piece of paper between them and the sensitive paper.

ON RETOUCHING PHOTOGRAPHS.

BY M. ADOLPH VON GOTZ, MEMBER OF THE VIENNA ACADEMY.*

AFTER a considerable period has been spent in exerting the most zealous efforts towards the improvement of photographic processes, with a view to the production of perfect negatives which should require no subsequent artificial retouching, we at last find that—at any rate, in portraiture—it is impossible to ensure perfection without having recourse to some artistic help, given to the positive, or more frequently to the negative, picture. This observation has led me to publish the results of my experience, extending over many years, with regard to retouching, in order to furnish a guide to those who are resolved to study this kind of manipulation. At the outset I must, however, remark that practice alone makes the student perfect, and that, if at first unsuccessful, the aspirant should not be scared away by the failure of a few of his earliest attempts.

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* *Philadelphia Photographer.*

* *Photographische Correspondenz.*

The art of retouching may be divided into three heads:—

1. Retouching upon the negative.
2. Retouching of photographic prints upon matt and albuminized paper.
3. Colouring of photographs.

1. *Retouching upon the Negative.*—The process of retouching the negative in such manner as to render it capable of producing a print of the finest description possible has been practised, no doubt, to some extent for a considerable period; but it was in the January number of the *Photographische Correspondenz* of 1866 that the first method of operating was described by M. Rabending, who thus directed general attention to the subject. Prior to this article, we believe, no communication had ever been made, much less a manual of instructions published, with regard to retouching the negative.

The manipulation of the photograph on glass is a much more difficult operation than the treatment of a print upon albuminized paper, and those who are able to provide themselves with a retouched negative as a pattern will of course be able to form a better idea of the method than can be conveyed to them by even the most elaborate description of the process. It is necessary, first of all, in order to perceive in what direction the negative should be retouched, to obtain a positive print from the plate in its original condition, so that the operator may see at a glance what alterations or improvements are necessary or desirable; the positive likewise shows where the retouching must not be overdone, so as to obliterate any characteristic marks, &c.

Another indispensable object in carrying on this kind of work is a retouching stand. This consists of a sheet of ground glass fitted into a frame which swings between two upright pillars in the same way as a toilet looking-glass, and may be sloped in any direction. Below the frame is a movable looking-glass reflecting the light through the negative above; the stand is placed parallel with the window, and the operator is thus enabled to retouch the most minute spots, comets, and stains. Retouching-stands of this description may be had of any photographic dealer.

The usual method of retouching negatives with indian ink, or with a brown opaque pigment, I have never found sufficiently seviceable. In the first place, these materials are easily removed; and, secondly, it is only in very rare instances that it is possible to imitate the original tone of the negative. The following compound, on the other hand, may be recommended as a very reliable and suitable material.

The films of several dry and fixed negatives which have not been varnished are rubbed down to as fine a powder as possible upon a glass plate, with the admixture of a little water; a little gum and sugar is afterwards added, but in quantity only sufficient to prevent the dusting away of the pigment. In working with this material a little more gum-water may be added when the portion of the negative to be improved is of a somewhat transparent nature, but in elaborating opaque surfaces the pigment is employed in its original condition.

The advantages of using a compound of this description are: firstly, the retouching pigment consists of identically the same materials as the film of the picture operated upon, and therefore it is quite impossible to hit upon any tone but the right one, the only point to be observed being the difference between light and shade; secondly, the compound is more easily manipulated, and not so liable to become removed from the glass as another; and, finally, on allowing the light to fall upon a negative retouched with it, no trace of the workings of the brush is to be seen. This pigment is already a commercial article, and may be purchased of all photographic dealers under the name of heliochrome.

It is, perhaps, not out of place to mention that a photographer's printing-room should always be kept perfectly dry, and should be so situated that when the pressure-frames are examined, they are not brought into a different temperature; as, for instance, from a cold into a warm locality. If care is not paid to this subject, it will be found that moisture condenses upon the paper, forming, with the superfluous nitrate of silver, very disagreeable stains.

Among other retouching materials may be mentioned one for effecting unimportant alterations—as, for instance, lines produced by imperfectly dipping the plate, &c.—I refer to an ordinary lead pencil. As, however, this often injures the varnished surface if not skilfully used, it should be remembered that the pencil must always be held in as slanting a position as possible. The pigment most generally used in retouching is undoubtedly carmine, which, owing to its very fine state of division, is capable of producing exceedingly beautiful and clear films, and may be obtained of excellent quality in commerce. That description which possesses but a very slight sweet taste—or, better, none at all—is to be recommended.

It is, of course, by no means an easy matter to work up a negative possessing hundreds of minute spots in the most transparent part of the film, where the shadows are without detail, so that the plate may produce a positive of soft and even appearance; but with patience and energy, together with a knowledge that the photograph will be of little use without the improvement, the difficulties will soon be overcome. If, as it often occurs, a negative is too transparent, producing prints of too dark a nature, it is best treated in the following manner:—The glass side of the negative is first carefully cleaned with cotton wool, and the transparent parts then washed over by means of a brush with a dilute solution of indian yellow. Before the pigment has dried, even in the slightest degree, the colour is manipulated with the finger until an even azure tint is formed, which may be done to perfection after a little practice.

2. *Retouching of Photographic Prints upon Matt and Albuminized Paper.*—In the first place we will consider the different materials required in the process of retouching.

Among the most important are the brushes to be used. In choosing these, it must be seen that they possess elasticity and a fine and gradually decreasing point, the best being made of sable or marten hair. When new, it sometimes happens that one or two hairs stand out from the point, thus interfering seriously with the work; these are best removed by slightly moistening the brush and drawing it quickly through a candle flame. The use of scissors is not recommended, as the point of the brush is thereby easily damaged.

It is as well to use every brush for a distinct purpose, according to its size and shape, as by so doing they last longer, and will be found to work with more ease and certainty. The larger brushes are adapted to the painting of the backgrounds and drapery, the smaller for elaborating the head, and the very small ones for the application of white pigments.

The choice of colours is likewise a very important matter. Those hereafter enumerated have been selected with the greatest care for colouring and retouching photographs, all such being avoided which, on account of their want of permanence or their injurious chemical action upon the photographic film, are to be mistrusted.

Naples Yellow.—A delicate light yellow, peculiarly applicable for flesh tones when mixed with rose madder varnish.

Light Ochre.—Applicable also in elaborating light flesh tones, and indispensable for colouring blonde hair.

Terra di Pozzuli gives a very vigorous tint, forming with the photographic tone very warm and mild tints.

Raw Sienna.—A transparent yellowish brown, very permanent and suitable for backgrounds; as also for dark blonde hair when mixed with sepia.

Burnt Sienna.—An effective reddish brown, useful in many cases, either for the deep shadows of flesh tints, or for painting objects of gold or wood.

India Red.—A durable red, chiefly employed for shadows in flesh tints.

Pink Ochre.—Very useful for ordinary tones when mixed with rose madder.

Rose Madder.—Indispensable for colouring the cheeks; a very delicate and permanent colour.

Dark Madder.—A vigorous red, chiefly employed for drapery, velvet, &c.; when mixed with cobalt blue a beautiful violet colour is produced.

Brown Madder.—A vigorous reddish brown, used for the deepest flesh shadows.

Vandyck Brown.—A warm brown, very suitable for shadows in dark hair.

Cassell Brown.—Used for colouring dark hair when mixed with neutral tint.

Sepia.—A warm brown, easily manipulated, and suitable for brown hair and for the shadows of blue drapery.

India Yellow.—A fiery and transparent yellow.

Neutral Tint.—Suitable for application to the shadows in white drapery; as also as a ground tint for backgrounds, columns, balustrades, &c.

Cobalt Blue.—A light and very permanent blue, to be employed for drapery; or, when diluted, for grey flesh tones.

Ultramarine.—A soft, vigorous blue, possessing a tinge of violet; to be used in the same manner as the cobalt blue.

Cinnabar Red.—This is, in certain cases, indispensable, but requires a basis of some other colour to protect the photograph, which would otherwise be injured by it.

Dark Chrome Yellow.—A fiery orange, which, when mixed with a body white, may be used for high lights, and to represent gold ornaments. There are two other descriptions of this pigment, which are lighter in tone.

Cinnabar Green.—Useful for drapery and landscape painting.

Mitis Green.—A pale bright colour for drapery, and likewise for the lights of a darker green.

Indigo.—Very useful for drapery, and, when mixed with sepia, produces a greenish brown tint, suitable for dark backgrounds.

Bone Black.—A transparent brownish black.

Lamp Black.—An opaque body-colour black.

Raven Black.—Possessing a bluish tinge when diluted, and applicable for colouring velvet and other intensely black objects.

Liquid Brown.—A transparent brown, which may be kept for a considerable time in a fluid state; it may be employed for strengthening the shadows in almost every part of the figure.

Body White is generally in a dry condition, and is moistened with water upon the palette every time it is used.

Besides the above, a cake of genuine indian ink should form part of the collection of colours.

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TO GET RID OF PINHOLES.

BY G. H. FENNEMORE.*

The treatment of the bath for pinholes is to dilute the solution with an equal bulk of water; but, in my experience, I have found that this is not always a remedy for any length of time. For a comparatively new bath, that amount, or even less, of water will answer the purpose; but when a bath becomes old and overworked, it appears to acquire the power of accumulating a large amount of iodo-nitrate of silver, which requires much water to bring it to subjection. I have seen solutions that gave plates full of pinholes, and, when held down, the surface looked like a piece of sand-paper. Such a solution, diluted with one-half its bulk of water, would scarcely show turbidity, and would not benefit the bath for more than a day or so. Again, old silver solutions, unlike other solutions, deposit more of these crystals when at a high temperature than at a low one. In winter, therefore, when the water is cold, its effect is lessened by its lowering the temperature of the solution. The plan, therefore, that I have found most serviceable is, to dilute the bath with four or five times its volume of water, the temperature of which has been raised to about 90° to 100° Fah. This throws down a dense, whitish-yellow precipitate, which is easily filtered out. When filtered clear, it is evaporated to fusion, redissolved in distilled water, and filtered. It has now an alkaline reaction on red litmus paper. Chemically pure nitric acid must be added until blue litmus paper turns slowly red. If it is the proper strength, it is then ready for use, and is as good as any new bath. This treatment purifies it from all organic matter. Some photographers use acetic acid in the bath, but this must by no means be used to make a bath acid after fusion, or you will have solarized lights without detail in the shadows. Should the bath be in good working order, with the exception of pinholes, the fusion may be omitted, but the dilution must be with distilled water, and then evaporated to its original volume of solution, filtered, and fresh crystals of silver added to make it 40 grains strong. A photographer who values his reputation for good work will always have two negative solutions, and as soon as one shows signs of exhaustion, it should be relieved and replenished, put in the light until the next one shows signs of exhaustion, and so on until pinholes again appear, when it can be again diluted and treated as above recommended.

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* *Philadelphia Photographer.*

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MR. BROWNING'S METHOD OF SILVERING GLASS.

A contemporary gives the following process, which will assist several of our readers who have recently made inquiries on the subject:—

To Silver Glass Specula.—Prepare three standard solutions. Solution A—Crystals of nitrate of silver, 90 grains; distilled water, 4 ounces; dissolve. Solution B—Potassa, pure by alcohol, 1 ounce; distilled water, 25 ounces; dissolve. Solution C—Milk-sugar (in powder), ½ ounce; distilled water, 5 ounces. Solutions A and B will keep in stoppered bottles for any length of time; solution C must be fresh.

The Silvering Fluid.—To prepare sufficient for silvering an 8-inch speculum:—Pour 2 ounces of solution A into a glass vessel capable of holding 35 ounces. Add, drop by drop, stirring all the time (with a glass rod), as much liquid ammonia as is just necessary to obtain a clear solution of the grey precipitate first thrown down. Add 4 ounces of solution B. The brown-black precipitate formed must be just re-dissolved, by the addition of more ammonia, as before. Add distilled water until the bulk reaches 15 ounces, and add, drop by drop, some of solution A, until a grey precipitate, which does not re-dissolve after stirring for three minutes, is obtained: then add 15 ounces more of distilled water. Set this solution aside to settle. Do not filter. When all is ready for immersing the mirror, add to the silvering solution 2 ounces of solution C, and stir gently and thoroughly. Solution C may be filtered.

To Prepare the Speculum.—Procure a circular block of wood 2 inches thick, and 2 inches less in diameter than the speculum. Into this should be screwed three eye-pins, at equal distances. To these pins fasten stout whipcord, making a secure loop at the top. Melt some pitch in any convenient vessel, and, having placed the wooden block face upwards on a level table, pour on it the fluid pitch, and on the pitch place the back of the speculum, having previously moistened it with a thin film of spirit of turpentine to secure adhesion. Let the whole rest until the pitch is cold.

To Clean the Speculum.—Place the speculum, cemented to the circular block, face upwards, on a level table; pour on it a small quantity of strong nitric acid, and rub it gently all over the surface with a brush made by plugging a glass tube with pure cotton wool. Having perfectly cleaned the surface and sides, wash well with common water, and finally with distilled water. Place the speculum face downwards in a dish containing a little rectified spirit of wine until the silvering fluid is ready.

To Immerse the Speculum.—Take a circular dish about 3 inches deep, and 2 inches larger in diameter than the speculum. Mix in it the silvering solution and the solution C, and suspend the speculum face downwards in the liquid, which may rise about a quarter of an inch up the side of the speculum. (The silvering will be completed in from fifty to seventy minutes, according to temperature; fifty minutes will be found sufficient in summer.) When the silvering is completed, remove the speculum from the solution, and immediately wash with plenty of water, using at least two gallons, and finally with a little distilled water. Place the speculum on its edge on blotting-paper to drain and dry. When perfectly dry, polish the film by gently rubbing, first with a piece of the softest wash-leather, using circular strokes, and finally with the addition of a little finest rouge. A "flat" may be silvered by fastening with pitch to a slice of cork, cleaning as above described, and using as much silvering fluid as will form a stratum about half an inch deep below the mirror.

Correspondence.

THE COPYRIGHT OF THE SEA.

Sir,—We have been taught from our earliest infancy that "Britannia rules the waves," but I never knew till a few days ago that she looked upon the sea as "copyright," or upon the shore as needing special protection from an art point of view. However, the following narrative of a day's photography at the sea-side will illustrate the position.

I started from here one day last week by an early train, taking with me a friend (a distinguished artist), and an asssistant, to manage the more bulky portion of my apparatus. We pitched our tent in a sheltered nook on the beach at Newhaven, intending to catch some fine clouds which were looming up over the distant sea; also, if luck and chance allowed, meaning to have a few shots (with the lens) at the sea gulls and the sunset. The apparently absurd attempt to take the gulls was not a wild goose chase, as I hope to show you some day. The first picture was secured, then another. The day was a glorious one—just right for our work. A fine wind from the south-west sent "the league-long roller thundering on the reef." The light was magnificent, such as only the early spring can enjoy.

We had not been long at our work when a soldier appeared on the scene. "Are you an Englishman?" quoth he. "I am so," said my friend; "arn't you?" He then solemnly informed me that I must not photograph the sea! At this we chaffed him, thinking he had, as soldiers too often have, a difficulty in knowing what to do with his time, and was inclined to joke with us. He then, waxing mightily wroth, said he belonged to the Royal Artillery, and was on duty; went off to fetch his superior officer, and returned shortly with a fat bombardier, and a guard, consisting of another soldier in a dirty jacket and with a short pipe in his mouth. These, with one accord, accused my friend of being a foreigner, and denounced our whole proceeding as that of spies, who had come to obtain views of the forts. Nothing could persuade these gentlemen of the innocency of our motives. We must not photograph the sea! Further enquiry led to the discovery that we had unwittingly placed our tent upon a part of the shingle which belonged to Government, and that if we moved off to a jetty a few yards further along the coast, we could pursue our operations unmolested. Finding there was no superior officer to apply to—the major living at Brighton and the captain at Folkestone—and not caring to have our valuable apparatus damaged by ignorant Royal Artillerymen, we removed to the spot indicated. Judge then of our surprise when, on arriving at the jetty, we found that it commanded a full view of all the forts and fortifications, so that had we a mind to do so, we could have made a complete set of pictures showing almost every detail of the defences, including the wooden gun on the battery—just what would be needed for an invading army!

There is an old story of Hogarth, who, when sketching at Calais, was taken up for a spy, but I question whether he was set down again in a place where he would have a better view of the fortifications, and told he could work there with impunity!

It is, perhaps, needless to add that in my own case I found the change no great detriment to my work, and I continued my operations unmolested till sunset. I may also add that the gulls very amiably posed—or, perhaps, I should say "poised"—for their portraits.

The moral of this little story is, I think, worthy of at least a passing note. Photography is every day becoming of greater importance, and every day we make progress towards greater perfection. Should not, then, all the officers in our army know something of its operations? Is it not ridiculous that we should have been officially removed from a part of the coast where we could not even see the forts, to a point from whence we could command a full view of them, because "no one is allowed to photograph the sea" from Government ground?

Those who are acquainted with Sergeant Harrold know the difficulties under which he had often to work in the Abyssinian expedition, from his superiors in rank not understanding the simplest conditions which render photography possible or impossible. Surely it is time the rudiments of photography, at least, were learned by men who, whether rightly or not, exercise supervision of "Britannia's domains."

There is just one other consideration, and I have done. Skilled men from all nations are allowed to inspect every detail of our arsenals, and to note our gunnery experiments at Shoeburyness and elsewhere: what further damage could a photographer do, even if he was sent by a hostile nation for the purpose of depicting the huge heap of bricks and scaffold poles on the cliffs at Newhaven?

Tunbridge Wells, April 20, 1869. H. P. Robinson.

ENLARGED NEGATIVES.

My Dear Sir,—Since my return from India, I have visited most of the large photographic instrument makers' establishments, and find them all, more or less, employed in making a new style of camera for taking pictures in the usual manner, and also for enlarging purposes. This being a subject I have often considered as one of the great wants of photography—viz., to get small instantaneous pictures, and enlarge them—I seriously contemplated giving an order for one, until I had some conversation with a friend of mine, who is thoroughly acquainted with all going on in the photographic world, and, to my astonishment, he told me "that although there are numbers of cameras being made for enlarging purposes, still no one had yet hit upon any system by which a really good negative could be obtained from a small one." This rather staggered me, for he at the same time told me that magnificent enlarged transparent positives could be got, but a good printing enlarged negative had yet to be produced. Of course, I need hardly say that my order for an enlarging camera has not yet been given, although I candidly confess I think it the best ever produced, even for direct negatives.

I cannot think there is any subject more worthy of the deep thought and experimental research of photographer than this one. With good lenses and collodion, deeply interesting subjects of moving life may be obtained, wholly out of the question with large lenses. Now, if some certain method of enlarging these to (say) 10 by 8 or 12 by 10 could be come at, pictures of foreign scenes (where you cannot get people to understand what it is to stand still!) might be done, that at present no photographer dare attempt.—I am, dear sir, yours very truly, An Amateur.

London, April 16th, 1869.

[The statement that a really good large negative cannot be obtained by enlargement from a small one is one which requires some qualifying. That the resulting picture of any method of enlargement must possess certain inherent defects it is not difficult to understand. The most delicate objects, when much magnified, often look coarse. The structure of a collodion film often appears somewhat coarse in the enlargement; the fine deposit of silver of which the image is formed assumes a granular appearance when enlarged; imperfect definition of parts, scarcely noticeable in a small picture, become painfully apparent in an enlargement; every stain, streak, defect, and pinhole becomes exaggerated, of course. Besides, very few photographers have devoted themselves to a proper understanding of the conditions which secure the best results in the production of enlarged negatives. Nevertheless, with very perfect small negatives, and skill in enlarging, it is possible to obtain very presentable enlarged negatives. We have seen 10 by 8 pictures produced by enlargement from stereo negatives of which there was little reason to complain. There are few branches of photography which demand a greater exercise of technical skill and judgment than the production of enlarged negatives.—Ed.]

HYPO FOR FIXING NEGATIVES.

Dear Sir,—By way of a grain in your useful fund of information, let me add that I have lately worked a quantity of negatives, taken ten years ago, which were fixed with hypo. They are as perfect and as free from blemish as then.

I also beg to call to your recollection the name of an amateur and gentleman (of whose productions many of our first-class professionals would feel proud), Mr. Whiting. He says that "in using cyanide we dissolve half our negatives, where little or nothing is ever lost with hypo."—Yours, E. Z.

Wandsworth, April 14th, 1869.

HYPO FIXING—NEW MATERIALS FOR MOUNTING.

Dear Sir,—Being about to write you on another subject, I desire first to thank Mr. Russell Sedgfield for his very satisfactory experience respecting hypo fixing, given kindly in last issue of your ever-welcome Journal. My mind is now quite set at rest on that point, and I shall continue, without scruple, to keep at a distance that stealthly, disease-producing chemical, cyanide of potassium, a chemical the very name of which should be a terror to the photographer.

Hyposulphite of soda, although at present an indispensable adjunct to the photographic art, is, it must be confessed, a friend which, when it has completed its work, should be carefully and perseveringly driven out of the sun picture. We can wash it out of the negative film, and also, I think, from the paper print, but we cannot be quite certain that we are not introducing the seeds of future decay into the latter through the medium of the paper mount so universally in use, and so generally believed to retain at times a trace of the paper-maker's bleaching fluid, the antichlor.

After the many useless solicitations to the paper manufacturer to oblige the photographer with a card that can be depended on for its purity, I was compelled to seek out another form of mount, which could be purified simply and easily, and to my certain knowledge and satisfaction. I found this desideratum in cotton and thread fabrics, which I have now used for more than a twelvemonth, and I find them to be far better than any kind of paper, besides possessing other advantages. I prefer Russian huckaback, marcellas, twill calicoes, jean, and thick and closely-woven holland. In the first-named ones there is the advantage of getting a variety of patterns, which diversifies the old style of photograph, by giving to it the appearance of a drawing made on a patterned drawing-board, and are especially suitable for copies of works of art, or of natural history, of fruits, flowers, &c. The laundress thoroughly washes the article in piece, gives it three coats of white Glenfield starch, and a perfectly smooth surface by the use of the usual hot iron, starch being used as the mountant.

Although so simple a variation from the long-used paper mount, nevertheless, I never saw it recommended in the periodicals, and, lest it should be pounced upon by the rapacious patent-monopolist for the sake of pecuniary gain, I desire to make the above public through the medium of your widely-circulated Photographic News.

The only drawback to the use of the above cloth fabrics is, their slight additional cost, which, to the amateur at least, will not be considered an objection worthy his notice, bearing in mind that by their use he gains an additional chance of permanency.—I am, Mr. Editor, yours very sincerely, Henry H. Hele.

Teignmouth, Devonshire, April 17th, 1869.

PHOTOGRAPHS BY LIGHTNING.

Dear Sir,—Some months since I was one night in my studio, when a terriffic thunder-storm came on, on which occasion the flashes of lightning were very vivid, and I determined that if an opportunity occurred again I would experiment a little.

Last Tuesday night, about 7.30, we were visited with one of the most fearful storms I ever remember seeing. I prepared a plate with my ordinary Mawson's collodion, placed my camera (Dallmeyer's 1 B lens, full aperture) on the stand (of course without focussing), and exposed during three flashes of lightning (about one minute between each), developed with the ordinary 20-grain iron solution, and was pleased to find I could distinctly trace the outlines of the buildings on the other side of the street for about fifty yards in length. Had I, fortunately, have had a previous experiment, I could, without doubt, have produced a negative with a few more flashes, from which tolerable prints could have been obtained. If spared to see another such storm at a suitable time I shall make further experiments. I merely mention the above as a matter of curiosity, and with a view to incite others to experiment.

I can fully bear out Mr. Russell Sedgfield's remarks respecting painting-out skies, &c., with water colours, having lost two or three valuable negatives by the peeling of the film, which was worked upon by cadmium yellow. I have used the black varnish, but cannot make it answer for fine lines, as it is apt to run. I now use Indian ink for the outlines, and then fill up with black paper, and, to prevent the film splitting or peeling off where printed upon, I pass a little negative varnish over it with a brush, and this I find answers remarkably well.—I am, dear sir, yours truly, Lightning.

Lincoln, April 17th, 1869.

Talk in the Studio.

Wet Collodion Without Water.—A good illustration of the value of the golden syrup solution in keeping the plate moist, for finishing at home, and so dispensing with the use of water when working wet collodion in the field, is furnished by a recent experience Mr. Robinson records in a letter. He recently started from home for a day at the seaside with nine plates, and returned home at night with eight 16 by 13 negatives. These were produced by the wet process, without a drop of washing water. Besides the bath, only 40 ounces of liquid were taken. The result was a success in ever way.

Gold Toning for Photo-Crayon Transparencies.—Some transparencies for photo-crayon portraiture which have come under our attention have been toned with gold, and have an exceedingly rich fine black colour. It will be seen from Mr. Sarony's recent announcement that he is willing to produce the transparencies for any of his licensees from their own negatives, until they have completed their arrangements for producing them for themselves.

The Recent Robbery at Mr. Hughes's Warehouse.—At the recent sessions, Joseph Ricketts, 21, pleaded "Guilty," before Mr. Payne, to breaking and entering the house of Jabez Hughes, his master, and stealing therein a quantity of photographic paper and other articles, value £2 10s., his property; and Frederick Smith pleaded "Not Guilty" to receiving the same articles. knowing them to have been stolen. Mr. Ribton prosecuted; Mr. Montagu Williams appeared for Smith. Mr. Hughes is a dealer in photographic articles, at 379, Oxford Street, and Ricketts was a porter in his employ. The house in Oxford Street was left empty at night, and articles being from time to time missed, Ricketts was watched, and seen, on the 30th of March, to go earlier than his proper hour to the house, effect an entrance, and remove some of Mr. Hughes's goods. Smith is a photographer, and brother-in-law to the prisoner Ricketts. Some of Mr. Hughes's goods bearing his mark were found in Smith's shop, but it appearing that Mr. Hughes's marks not being effaced on goods when sold, Mr. Ribton withdrew from the prosecution against Smith. Ricketts was sentenced to two years imprisonment with hard labour.—*Times*.

Local Photographic Exhibition.—We find a column and a half of the *Western Daily Press* devoted to a notice of a photographic exhibition opened in connection with the studio of Mr. C. Voss Bark, at Clifton. Besides the display of ordinary portraiture, there appear to be examples of plain and coloured enlargement, opalotypes, carbon prints, enamels, double combination printing, &c. The exhibition of a collection of this kind in provincial towns is to be commended.

Correlation of Forces in Photography.—Dr. Liesegang, in a recent interesting account of a visit to Mr. Woodbury's Photo-relief Printing Establishment, after describing the electric light used, which is obtained by the working of Lenoir's gas engine, says:—"It is curious to consider what a range of natural powers is set in motion in this work. Dr. Phipson has shown this. Chemical action in the electrical battery sets free electricity, this produces a spark whose heat enfires the gaseous mixture in the gas engine, thus setting in motion the piston; this motion is communicated to the magnets of the electro-magnetic engine, whose magnetism is thus converted into an electric current which produces light, the chemical action of which produces in the sensitive gelatine a molecular motion, and the result of all is the picture!

Fulminating Silver.—There is a compound of silver which a photographer might unwittingly produce—the fulminate of silver. If a solution of nitrate of silver containing nitric acid be warmed, and alcohol added, a white precipitate forms, which is the compound in question. A photographer evaporating to dryness an acid bath which had been long in use, and contained alcohol, might find himself and his dishes elsewhere towards the termination of the boiling down of the solution.—*Philadelphia Photographer*.

Simple Plan of Filtering Collodion.—Take a bottle that will hold 1 pound, with a neck one inch or more long, remove the rim by the alcohol string, and with a file wet with dilute sulphuric acid (acid 1 ounce, water 1 ounce), dress off the edges of the bottle inside and out. With a round file make the inner edge, bevelling out a little; now, with a glass tube the proper length, and a strip of Canton flannel (best), 1½ inches wide, and long enough, so that when it is wound around the tube it will fit snugly into the mouth of the bottle. Now fill the bottle with the collodion to be filtered, insert the tube to the bottom of the bottle, and carefully twist the roll of Canton flannel to its place. Select a wide-mouth bottle the proper size, and, with glue or mucilage, stick a fold of wash-leather or two around the neck of the bottle No. 1, and insert it in the wide mouth after inverting it and giving it a quick, downward shake, to clear the tube of unfiltered collodion. The Canton flannel may be wound so as to be tight or loose, and if it does not filter the collodion clear, what will (if properly fixed)? A clean piece of flannel can be used for every filtration, and it is not so easy to get it too tightly wound. If you are not in a hurry for your collodion you can glue the wash-leather on the first bottle, and let it dry, and dress it to fit the neck of the other bottle with sandpaper.—*Philadelphia Photographer*.

Application of the Oxyhydrogen Light to Street Lighting.—M. Tessié du Motay continues his experiments with oxyhydrogen gas in the courtyard of the Tuileries, with success as regards the effect produced, but we know nothing yet of the comparative cost of this and ordinary gas. Several modes of lighting were tried. On the occasion of the balls and other entertainments given at the palace, powerful lamps were placed on the triumphal arch at the entrance, and at other points of the enclosure, and a very brilliant effect was produced without unpleasant dazzling. On ordinary occasions the oxyhydrogen light is placed in the usual gas lanterns, and the light is very pleasant as well as effective. At the main entrance to the courtyard are two large lamps, which each contain three lights, and the effect is very brilliant. The zircon cylinders used are certainly effective, and they are said to exhibit scarcely any alteration whatever after considerable use. Those used generally at the Tuileries are very small, apparently about a quarter of an inch high, and even less than that in diameter; they are pierced vertically through the centre, and are merely placed on platinum points.—*Journal of Society of Arts*.

To Correspondents.

E. Juba.—Ordinary albuminized paper would require an exposure of many hours before any trace of an enlarged image could be obtained by artificial light. If you wish to use artificial light you must use a developing process; you will find several described in our last Volume. A mixture of alcohol and any of the hydrocarbons will give a good light, but some care will be necessary to avoid an explosion. A mixture of four-fifths alcohol and one-fifth camphene will give a very good light. 2. Your plan of removing old films will answer very well, but is a little expensive.

W. M.—The D of the maker you name will answer your purpose much better than his triple, being much the more rapid of the two.

R. T.—The canvas usually employed for photographic enlargements to be coloured in oil is the ordinary prepared canvas sold by artists' colourmen. In some formulæ it is necessary that the canvas should be prepared purposely; but this is not usually the case. You can get the prepared canvas of any dealer in artists' materials. Newman's, Soho Square, is a good place. 2. You can enlarge from any size of negative, but a 5 by 4, or quarter-plate, is a convenient size. 3. You will find various formulæ for enlarging on canvas in our back volumes. You will find two methods on p. 179 of our last volume. 4. Any good negative collodion will answer for producing enlarged negatives: there is none prepared especially for the purpose.

B. Atkins.—Your descriptions of pictures are too indefinite to enable us to state whether they are or are not copyright. The "English Gamekeeper" and "Scotch Gamekeeper," to which you refer, are probably single figures engraved from Sir Edwin Landseer's pictures, and these are copyright; so, also, is the "Stag at Bay." The original picture of Nelson on board the "St. Joseph" belongs to the nation, and is in the Gallery at Greenwich. The engraving from it is no doubt copyright.

K. C. B.—You do not sufficiently describe the process you use, nor at what point you experience difficulty, to enable us to help you sufficiently. Chrome alum may be applied in solution to the film of gelatine, or may be added to the solution of gelatine. About half a grain of the chrome alum to an ounce of solution will answer. The use of chrome alum for the purpose is patented by Mr. Swan.

C. Richards.—The preparation for keeping the plate moist which is used by Mr. Robinson consists of equal parts of golden syrup and water. This is applied to the plate as soon as development is completed. The plate is then put in a box, and kept for further intensifying (if required) and fixing at home.

J. C.—We see no reason to doubt the fitness of the card you forward for photographic purposes.

Collodion.—It is very difficult to remove prints from the mounting-board when starch paste has been used. Nothing but prolonged soaking in warm water is of any service, and then much care and patience are required. 2. The lens you mention is not intended as a wide-angle. Your experience with it in other respects does not correspond with that we have commonly heard. 3. It is probable that any camera maker will supply you with a new bellows for your camera. 4. We will publish details of Mr. England's new dry process as soon as he has satisfied himself that the process is satisfactory in all respects. The final wash of gallic acid gives certainty of keeping qualities in many processes, but it generally reduces sensitiveness. 5. We have not tried the collodion you name, but have heard some good accounts of it. 6. We generally give prominence in our pages to subjects in proportion to their interest to the mass of our readers. No subject connected with photography is neglected; those features of the art most interesting to the largest number are dealt with most fully.

C. W. H.—Mr. Gulliver is a professional photographer at Swansea. He is not an apparatus maker. The letter shall be forwarded.

J. B. B.—The proportion of 1½ grains of gelatine in an ounce of iron developing solution is undoubtedly very large, and will not only make the solution too viscid for convenient use, but will render long exposure necessary. The explanation of the formula existing is simply that, at the time it was proposed, the extent to which gelatine acts in retarding reduction was not well understood. Subsequent experience has shown that it may be considerably reduced with advantage, and that it must be reduced where rapidity is required. We have found that 1 grain to a pint of iron solution of 15 grains of protosulphate to the ounce and 15 minims of acetic acid to the ounce materially and beneficially affected development; and, except for intensifying, we do not like much more. Some use as much as 10 grains to a pint, and, for developing dry plates, as much as 20 grains to the pint, but that proportion retards reduction considerably. However, it must be borne in mind that much depends on circumstances. If much contrast is required in a subject but feebly illuminated, and the collodion be new and the bath neutral, then a large proportion of gelatine might be desirable. If, on the contrary, rapidity of action and softness of result are required with a collodion and bath favouring contrast, then gelatine should be avoided altogether. It aids in securing intensity and freedom from fog; used in excess, it produces hardness. 2. For pure landscape work, the landscape lens is better of the two, and is more rapid.

W. Bussell.—Take courage: you are in no serious difficulty, and, with care and perseverance, will soon succeed. Your printing materials and your operations are all right; the only fault is in the negative, which is not sufficiently intense; that is, the deposit on the face is too thin, and permits the light to pass through too freely. Take care to intensify your negatives a little more, so as to secure a little more contrast. It is probable, from the appearance of the print, that the want of intensity is partly due to the lighting of the figure; the light on the head is scarcely sufficiently vigorous, and there appears to be a little too much diffused light in the room. You must not forget that, in order to undertake the duties of a photographer professionally, you will have to acquire much experience; but if you set about it earnestly, perseveringly, and intelligently, you will make rapid progress. Your purchase appears to be a good one, and on reasonable terms. The only modification in your printing operations we need suggest is to wash the prints less before toning—one or two hasty rinses will serve—and to change the water more frequently after fixing. Procure Mr. Hughes's "Principles and Practice of Photography," which you can obtain free by post for 1s. 2d. It is one of the simplest and best guides you can follow. Let us know of your progress.

H. Ellis.—The pinholes are doubtless caused by the bath being surcharged by iodo-nitrate of silver, which, having crystallized out, forms the fine deposit you describe. Dilute the bath with its own bulk of distilled water. This will make it turbid with a precipitate of iodide of silver. Filter carefully, and, when quite clear, add sufficient nitrate of silver to make the solution the proper strength. We regret that the pressing nature of our duties does not permit us to write private letters on the difficulties of our readers.

Lightning.—The peculiar stain in the negative you forward is probably due to the use of an old bath with an accumulation of foreign matter. We have seen such stains arise from such a cause. Try treating the bath with permanganate of potash, or sunning. Your curious experience with the lightning appears in another column.

C. W.—In a really good landscape negative the sky should generally be somewhat transparent, but it is not difficult to make it more dense if required. If you use a 5-grain developer you will probably get more density; if you add a little gelatine to the developer you will get more density. You may also get more density in the skies by redeveloping with a little silver added to the developer, pouring on and off the sky repeatedly. Mr. Bedford and Mr. England frequently mask the sky with tracing paper, on which a few clouds are often indicated.

K. Hearn.—Much depends on the purpose in boiling down, as to whether it is necessary to boil to dryness. Heat has a similar action to light, and often aids in reducing organic matter in combination with silver, which, after boiling, may be filtered out. The best plan to get rid of the iodo-nitrate of silver is to dilute with an equal bulk of distilled water, and then filter, or make hot, and then filter, as the heat will effectually aid in precipitating iodide of silver. If you have not an evaporating-dish, take a wide, clean jar, and place it in a pan of water like a glue-pot, and allow it to boil to dryness, or nearly. Then dilute to the proper strength. 2. In using permanganate of potash, we should add a few drops of a 10-grain solution; this will cause a brown turbidity, which will subside. Then add a drop or two more. If sufficient has been added, instead of causing a brown turbidity, the second addition will cause a pink tint. This will indicate that sufficient has been added. It is only necessary to filter the solution and try it.

H. H. Hele.—There are various modes of intensifying varnished negatives. In Mr. England's process the varnished surface is removed by means of alcohol, and then pyro and silver, with alcohol freely added, are employed. We have found the plan of applying a little tincture of iodine answer well. Cover the varnished film with alcohol, drain, and then apply a solution of iodine in alcohol (say 4 grains to the ounce). This will turn the deposit of an olive tint, and make it more intense. Again rinse with alcohol, and varnish. The only care necessary is to avoid going too far, in which case the film will acquire a light yellow, or primrose colour, and be even less intense than at first.

W. J. N.—Acetic acid once added to a nitrate bath is most difficult to get rid of. There is no effectual plan but boiling down the solution to dryness, and then redissolving.

W. H. J.—The rectilinear lens used in the dry-plate experiments described, was the wide-angle, not the rapid. We cannot state exactly the size of the aperture. The trial was a relative one between various kinds of dry plates, with a wet plate as a standard, and all were exposed under the same circumstances; hence it was not important what lens or aperture was used.

Sunshine.—The yellow mottled effect is due to imperfect fixation. The prints have been fixed in an old or weak hypo bath, or they have not been sufficiently immersed. A trace of insoluble hyposulphite of silver is thus left in the print, which slowly decomposes when the print is exposed to light.

Received: "Photographie au Charbon," par M. Leon Vidal; Collodion and Varnish, from Mr. S. Fry; Views of Irish Scenery, from Galbraith, Jennings, and Co.

W. Whiting and several Correspondents in our next.

Photographs Registered.

Mr. T. Seed, Bristol,
Photograph of the Rev. J. Bonomi.
Mr. A. Winterbon, Southampton,
Photograph of the Rev. Thos. Adkins.
Mr. C. Sanderson, Preston,
Photograph from Painting of Rev. Father Corr.
Mr. L. Lowenthall, Bristol,
Photograph of Jewish Synagogue, Bristol.
Miss E. V. Day, Bournemouth,
Three Photographs of Col. Sir G. B. Pechel, Bart.
Mr. J. T. Trull, Falmouth,
Photograph of The Tolman Rock.
Mr. J. R. Griffiths, Brecon,
Two Photographs of Lord Claude Hamilton.
Mr. Appleyard, Brighouse, York,
Two Photographs of Robin Hood's Grave.
One Photograph of Old Convent in Kukless.
Mr. W. Burns (Solicitor), Glasgow,
Photograph of Collection of Autographs in Oak Frame.
Mr. Boak, Great Driffield,
Photograph of J. Inwards, Esq.
Mr. J. Humphreys, Cheltenham,
Three Photographs of Rev. W. Guinness.
Mr. D. Alison, Montrose,
Photograph of Col. Macdonald Macdonald.
Mr. Tilley, Southsea,
Photograph of H.M S. Victory.
Mr. H. Kerr, Londonderry,
Two Photographs of Sergt. Dowso, Q.C.
Mr. J. C. Clarke, Aldeborough,
Photograph of Sir A. Shafto-Adair.
Mr. H. R. Sanders, Red Hill,
Four Photographs of Rev. Jas. Fry.
Four Photographs—Groups of "Pifferari.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 556.—*April* 30, 1869.

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ARE GUM-GALLIC NEGATIVES PERMANENT?

A doubt cast on the permanency of the negatives produced by any process is one of the most formidable suggestions which can be made; and if it were proved that any special mode of working endued the negatives with the elements of destruction or decay, the excellent results obtained, the simplicity of the operations, and the sensitiveness of the plates would count for little in the estimation of most photographers. Many of our readers will, therefore, be startled, as we were, on reading the heading of the following letter:—

"Gum Plates in Peril.

"Sir,—I was somewhat startled, if not alarmed, by reading a statement contained in Mr. Russell Sedgfield's communication on 'Fixing Negatives with Hyposulphite,' in your last week's issue, in which he says: 'And here let me warn your readers against stopping-out skies, or any large spaces, with water colours, and particularly moist colours; such treatment is almost certain to spoil the negative. The effect may not be manifest for years, but some warm day, on looking out the negative, and putting it out to print, it will be found that the whole of the painted parts chip and peel off, exposing the bare glass. The cause is the hygroscopic vehicle used—gum, for instance, which expands and contracts very considerably, according as the weather is damp or dry, and gradually loosens the adhesion of the film.' To an ardent admirer and manipulator of the gallico-gum process, I must confess the above words sounded very much like a death-knell to the hopes he had cherished, that many a lovely negative he possessed would be not only 'a thing of beauty,' but 'a joy for ever.'

"If Mr. Sedgfield be correct in his assertion (and I greatly fear, from the character of the authority, that he is), never was a greater misnomer applied to a process than to this. Instead of designating it the 'Gum Preservative Process,' it surely should be called the 'Gum Destructive Process;' and henceforth dry-plate men will have (viz., if they desire any peace of mind and freedom from grey hairs) to return, however reluctantly, to their first loves, whatever they might be. How will those men fare who, wishing to protect their (best collodion) films from the reducing or dissolving effects of varnishes, treated them with a preliminary coating of gum-water? The whole thing is too terrible to contemplate, and I trust, Mr. Editor, you will vouchsafe to devote a 'leader' to allay our fears, or suggest a remedy.—Believe me, sir, yours very faithfully, Cymbo."

We may say, at the outset, that we do not think that gum-plate negatives are in peril. The conditions described by Mr. Russell Sedgfield do not apply to gum negatives. In using water colours mixed with gum for the purpose of stopping-out negatives, it is applied over the varnish, and generally receives no other protection, so that, being very hygroscopic, it is readily acted upon by moisture, expanding considerably in damp air, contracting considerably in dry or hot air. and, being over only a portion of a negative, it possesses every facility, in this expansion and contraction, of tearing away portions of the film. This, it will be seen, is a very different state of things to that which exists where a thin film of gum on the negative is protected by a coating of varnish.

But, in the case of gum-plate negatives, we may go further. It is probable that very little, if any, gum whatever exists in or on the finished negative, as will appear on a little observation and reflection. In preparing the plate, it either receives a wash of gallic acid before the gum preservative is applied, or the gallic acid is mixed with the gum, and both are applied together. Now, as the plates are developed with iron, this gallic acid must be got rid off before the developer is applied, or an immediate decomposition would take place, forming gallate of iron: in short, the plate would at once be covered with black writing-ink. As it is tolerably clear that when the gallic acid is removed by washing there is little chance of much gum remaining, all the cause for alarm vanishes. Both the gum and the gallic acid appear to be sufficiently removed with a very moderate amount of washing. The use of the iron developer with these plates serves, it will be seen, another good office, besides efficient development: it indicates when the gallic acid—and, consequently, when the gum—has been sufficiently eliminated from the plate to remove future risk to the negative from the presence of a body readily absorbing moisture.

In relation to the use of a dilute solution of gum-water to protect films which are apt to dissolve under the varnish, or to peel off the plate in drying, there are two considerations: first, the practice is never recommended, except for the purpose of averting a greater and more imminent peril to the negative; and, second, the solution is applied so exceedingly thin, that it to some extent permeates the film, instead of remaining as a layer upon the surface, and, after varnishing, is so thoroughly protected by the resinous envelope which each particle of gum receives, that there is comparatively little danger to the negative, we apprehend, from changes of temperature and atmospheric conditions, causing expansion and contraction of the film.

MEDAL FOR A MODE OF TRANSFERRING NEGATIVES.

In the report we published a few weeks ago of the last meeting of the French Photographic Society, an announcement will be found, made by M. Davanne, offering the

Society's large silver medal for a perfect method of transferring negatives. For readiness of reference we repeat the announcement:—

> In the name of the Committee of Administration, M. Davanne stated that all recent innovations made respecting the carbon process had been undertaken with a view of doing away with the necessity of a double transport, and likewise to obviate the use of a solution of caoutchouc in benzole or other disagreeable compounds. To do away with the double transport there appeared to be but one method, viz., to employ a reversed negative. Owing to the transition state of our positive processes at present, it would be inconvenient to take negatives reversed, as they could then be used in no other process; but it would be preferable, theoretically, if a negative could be produced capable of being used either in a reversed manner for carbon printing, or in the usual way for silver printing. In order to encourage the prosecution of research in this direction, the Committee propose to award in April, 1870, a silver medal, made according to the large model adopted by the Society, for the best *non-patented* process for obtaining or transporting *cliches* upon a pellicle presenting, if possible, the following advantages:—It should be sufficiently thin to be capable of yielding a clear image from both sides, sufficiently solid for ordinary use and for a prolonged period, unalterable by the action of the atmosphere or continued heat of the sun, or by light; and, while insisting on this point, it should be remembered that the solutions of rubber hitherto proposed have generally possessed the inconvenience of becoming darkly coloured by the action of light. The surface, like a varnished negative, should be capable of supporting, without staining, contact with dry nitrate of silver; and, finally, the material should be capable of application to all descriptions of wet or dry collodion plates, collodio-albumen, tannin, and varnished negatives; in the latter instance a good method should be stated for removing the varnish. The intention of the Committee was that the medal should be given in addition to the annual prizes, and that all published processes should be allowed to compete with proposed novelties.

Two or three points in this announcement are worthy of a word of comment. First of all we may remark, by the way, that the system of this Society, of offering honorary rewards for the purpose of stimulating research in regard to any desiderated result, is worthy of all commendation, and furnishes an example which English societies, especially the parent Society, would do well to follow.

The point upon which we especially wish to remark is, the serious difficulty which may arise in determining the legitimate recipient of such a medal. The committee wisely state that published processes will be permitted to enter into the competition. Now as, beyond question, the method of transferring by means of leather collodion—that is, a thick film of collodion rendered tough by the addition of castor oil—is the best at present known, and as it is by no means improbable that it may prove the best at the time of the award next year, to whom would the medal be due—to the original inventor of the method, or to the various adapters and modifiers of the method? And if to the original inventor, the question again might be asked, which of these? Herr Grune, and Dr. Jacobsen, of Berlin, were the first to propose and employ this prepared collodion, which they named leather collodion, for the purpose of transferring films; and Dr. Vogel published his experiences, which were stated to be very satisfactory, about three years ago in our columns. This was the first publication of the method in this country, and the publication of the same facts in Germany about the same time or a little earlier was the first announcement made of such a process. In the meantime—and as the result, we believe, of quite independent research—Mr. Woodbury worked out, and subsequently published, a similar process. We have reason to believe that all other modifications of this method are based on the information published by Mr. Woodbury and our German friends. The honour of priority is undoubtedly due to Herr Grune and Dr. Jacobsen; and in many respects the modes now employed scarcely differ from that employed at first in Germany.

The use of india-rubber is pre-condemned by the committee, and, we think, rightly so. That india-rubber darkens under the action of light there can be no question; and that under the combined action of light and air it absorbs oxygen, and becomes converted into a non-elastic friable resin, there can be equally little doubt. Mr. Woodbury has already discarded india-rubber as the preliminary coating, and at present employs a solution of gum arabic. Whether this is the best substance remains to be determined; it seems desirable that some other transparent elastic film, insoluble in ether and alcohol, which may serve to protect the negative from injury when the transfer collodion is applied, should be found.

One of the motives of the committee in offering this medal is stated to be a desire to get rid of the use of india-rubber solution, and its unpleasant solvents, used for mounting in Swan's carbon process. In Mr. Johnson's recent process this material is already dispensed with, together with some other operations, and the process of carbon printing by double transfer is now rendered almost, if not quite, as simple and rapid as the single transfer process, which renders transferred negatives necessary. The importance of a satisfactory mode of transfer is not, however, in any degree removed. For a variety of photo-engraving processes a transferred negative is still imperative, and the possibility of getting rid of the enormous quantity of glass necessary at present in storing negatives alone renders a perfect method desirable.

CURIOUS EXPERIMENTS WITH THE INVISIBLE IMAGE.

We recently recorded Mr. Fothergill's curious experiment with the image on a collodio-albumen plate, in which a developed and fixed negative was treated with nitric acid, which completely dissolved the reduced silver forming the image, leaving a transparent film on the glass, all trace of photographic treatment being apparently removed. In this state it was again submitted to the action of developing solution of pyrogallic acid and silver, by which the image was perfectly reproduced, and an excellent negative obtained, the experiment being repeated three times with one plate, all trace of an image being each time completely removed by the nitric acid, and as completely restored by a further application of the developer.

Old photographers, of course, remember the similar experiment of Young, about ten years ago, in which a collodio-albumen plate, having been exposed, was submitted to the action of hyposulphite of soda, by which the iodide of silver was dissolved, leaving, apparently, a bare transparent film of albumen and collodion on the glass. The plate, after this treatment, was submitted, in daylight, to the action of a solution of pyrogallic acid and silver, by which an image was developed, and a perfect negative obtained. A wet collodion plate, subjected to similar treatment at the time, gave no results whatever, suggesting that an organic salt of silver was necessary in this case to form the germ or invisible image. Mr. Carey Lea, a few years ago, in the course of his curious experiments on the invisible image, having excited a collodion plate coated with bromo-iodized collodion in the usual way, exposed it, and then, instead of developing, fixed it in hyposulphite of soda, removing all trace of a silver salt, and leaving, apparently, a plate of glass covered with a transparent film of collodion. This, on treatment with an iron solution to which a little nitrate of silver was added, yielded a good negative. Mr. Hughes recently related to us details of some similar experiments, in which perfect negatives were obtained by development after fixing, and the apparent removal of all trace of the silver salts, regarded, naturally, as the source of the invisible image. In both these cases the experiment succeeded with ordinary wet collodion plates, which, in Mr. Young's hands, had failed, in his case the collodio-albumen film being necessary to the result.

A note just received from an intelligent and experienced professional photographer, Mr. R. H. Preston, of Penzance, relates some analogous curious results. He says:—

"The experiment recorded in last week's paper, as accomplished by Mr. Fothergill, I remember to have tried many years ago, with this difference, that the plate was simply collodionized. If I remember right, I also effected a like curious result by turning the deposit into iodide of silver by iodine, then removing this by cyanide by giving a wash of nitric acid before recalling the disembodied figure from the 'vasty deep.'"

We do not here enter into speculation as to the *rationale* of these singular results, but record them as important contributions to the solution of the unsolved problem as to the nature of the invisible image produced by the action of light on sensitive salts of silver. We may remark, however, in reference to Mr. Young's experiment with a simple wet collodion plate, which failed to yield an image under similar treatment to that which succeeded with a collodio-albumen plate, that it is probable that a simply iodized collodion was employed; whilst in Mr. Lea's and Mr. Hughes's experiments, a bromo-iodized collodion was employed. In each case with the successful plates, it seems two sensitive salts of silver were present in conjunction: in one, iodide of silver and albuminate of silver, and in the other, iodide of silver and bromide of silver. We shall be glad if Mr. Preston can furnish a more detailed account of the interesting experiment he records, as it is only from a precise knowledge of the facts that any valuable deduction can be drawn.

HYPOSULPHITE FIXING, AND CRACKED FILMS.

The question as to the influence of hyposulphite of soda on the negative film, in relation to cracking, recently revived in our columns, has called forth numerous communications on the subject, verbal and written, the universal tenor of which has been in favour of this salt as a fixing agent. It is worth noting that, as a rule, the most experienced photographers use hypo only for fixing. Having adopted its use in the early days of the art, they have never seen any occasion to change. Our friend Dr. Diamond, for instance, remarked to us, a few days ago, that he had never fixed a negative except with hyposulphite of soda, and he had never had a single instance of a split film. Those photographers who use cyanide for fixing negatives, we find, are frequently those who first adopted its use for fixing collodion negatives. Some of these, who have abandoned the use of cyanide, have still retained, however, the habit of hasty washing which it was common to use with cyanide; for it is worth note that cyanide is much more readily washed out of a film than hyposulphite of soda. The one condition of safety, when hypo is used, is plentiful washing, to remove all trace of the salt. Some of our correspondents recommend a little soaking, some recommend the use of warm water; but in all cases perfect washing is imperative to secure any certain degree of immunity from risk of future injury to the negatives.

VISITS TO NOTEWORTHY STUDIOS.

Mr. Rejlander's Studio in Westminster.

Mr. Rejlander has just opened a new and very handsome studio in Victoria Street, Westminster, of great size, possessing a singular variety of facilities for the production of the rare artistic effects of composition, light and shade, and expression, as rendered by photography, which are associated with the name of O. G. Rejlander throughout the world. At the time of our visit, Mr. Rejlander had only just obtained possession of the studio, which has been built under his direction, and the arrangements for working were not completed. We shall, at present, simply give a brief description of the room itself, speaking of dimensions in general terms, with a view to a more minute presentment on some future occasion.

The studio occupies the whole of the upper floor of one of the noble buildings in Victoria Street, named Albert Mansions, its length running from the front to the back of the house. Its length is about 40 feet, and its width about 18 feet. This length, which will afford great facilities for the management of groups, and some other effects, would be manifestly inconvenient for use on ordinary occasions, and will, therefore, be subdivided for general use. About 12 or 14 feet at the south end, facing Victoria Street, is separated by red cloth curtains, making an apartment to be appropriated to Mr. Rejlander's own use for painting, &c., the remainder being devoted to the purposes of the photographic studio, or, to speak more correctly, studios, for this portion will practically form two studios. We have avoided the use of the term glass room, for, whilst here the amount of light and the facility for variety of lighting are unusually great, we have no glass room in the ordinary sense of the word. It is a handsome, well-built apartment, with a few magnificent windows, which can be used separately, or in conjunction with each other, as may be required for lighting the sitter.

At the north end of the room is a window formed of one single plate of glass about 9 feet by 7 feet. This is arranged so that it descends into a groove out of sight, giving an open space to the northern sky of about 9 by 7 feet. It will be seen in a moment that with a window like this used as a side light, here is one magnificent source of lighting for portraits. When the window is opened there is a flat of about 10 or 12 feet outside, accessible for addition to the length of the studio, and, with the sitter placed in suitable relation to this window, the camera can be placed in many varied positions in relation to him, securing good effects of lighting in each, some admirable open air effects being possible, great rapidity of action being, of course, secured.

On the west side of the room are two windows, each about 7 or 8 feet by 6 feet, each of a single plate of glass. In the roof is a skylight of about 12 or 15 feet by 9 feet, a portion of which is covered with obscured glass, admitting a large flood of top light. These varied sources of light, each admitting of being used alone effectively, or in conjunction with the others, afford a very complete system of lighting, giving unusual facility for variety of effect. The leaded roof over the dark room, and portions of the studio, again, are available for open air effects in portraiture, being especially suited to the production of effective groups, and for printing purposes.

For the present, we do not enter into detailed description of the admirable dark room, the magnificent reception room, and other apartments. Our aim is to afford suggestion by describing the general lighting facilities which are chosen by a man of Mr. Rejlander's fertile genius as affording scope for those beautiful effects of light and shade of which he has shown himself such a master, and by which he has so effectually maintained the art claims of photography. The variety and amplitude of the lighting facilities at first sight seem embarrassing, and suggest curious speculations as to how the extensive capabilities of the place can be controlled. To a photographer of less genius than Mr. Rejlander the task would probably be hopeless. We look forward, however, with interest for fresh pictorial triumphs, and, at the same time, express a cordial wish that the commercial success may be as complete as the facilities for excellent work should command, and the responsibilities involved render desirable. If that success be in any degree correspondent to the merit of the artist, it will leave little to be desired.

ON PRINTING PHOTOGRAPHS ON PREPARED PAINTERS' CANVAS AND SIMILAR SURFACES.

BY PETER LOTHIAN.*

Much has been written about photographic printing on paper in its various phases, but comparatively little has yet been either written or said on the application of silver printing to other surfaces than paper. Patents, it is true, have been applied for, and, in some instances, they have been actually completed, claiming the exclusive right to print with certain substances on certain textures, and, by virtue of our wonderful patent laws, they (the patentees) have even been able to induce people to spend their good, hard-earned money on the attempt to restrict further invention to the particular groove of the patentee.

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* Read at a meeting of the Edinburgh Photographic Society, April 21st, 1869.

This attempt to restrict the range of experiment is as insane as attempting to restrict the limits of thought. Be this as it may, the subject I have been desired to bring before you has been made by many more or less a subject of mystification, and the wonder to me has been that some adventurous fellow with more money than brains has not long ago patented it, whether he knew how to do it or not. Judging from the general run of the specifications I have seen, any possible process of printing on painters' prepared canvas or allied surfaces will be sure to be claimed for the proprietors of half-a-dozen of useless patents, and thus, so far as they are concerned, been placed, to all law-abiding subjects like you and I, gentlemen, beyond the possibility of either improvement, experiment, or investigation.

But, fortunately for us who are professional photographers, there has been apparently no appropriating inventor who has yet included, so far as I know, direct silver printing on the impure oil-painty surface known as "painter's prepared canvas" in his specification, provisional or otherwise. The apparent exception to this is that indefatigable but most incommunicable mortal, Mr. John Pouncy, of Dorchester, who some years ago proposed to use the substance I speak of to transfer his printed pictures to. These were said to be—and probably they were—carbon pictures in oil; but I must say that, as a young man not well read in photographic literature, I have had doubts as to what the bitumen pictures of the only patentee who claims oil printing as part of his claim to protection were, that he should be allowed to have the protection of Britannia for what no one knows anything of, and which, if they are anything, must be merely modifications of the earliest known process of Niepce.

What I propose to bring before you to-night does not depend on any of the occult or more difficult-to-be-determined questions of science, but simply relates to a few details of ordinary manipulation, and the application of the same powers, and which are so well known to the photographic printer on paper. Cleanliness and carefulness are, it is well known, indispensable in all photographic work, and it is by these qualities alone that success in prepared canvas printing is attainable.

But it is not on canvas alone that the process of which the specimens are before the Society this evening can be printed; it is applicable to all impervious or semi impervious surfaces, of whatever material they may be composed. When a porous surface, such as wood or similar substance, has to be operated on, the only requirement is that the porosity be destroyed by varnish, paint, or some such material; and this may either be salted before use, or the salting be added after it has become dry. In fact, there seems no limit to the application of nitrate of silver to any substance of the character I have described, provided it be not allowed to penetrate deeper than the outer surface of the substance operated on, and provided the kind of salting used be suitable to the material operated upon. This is a matter in which there is considerable room for latitude, almost any of the ordinary chlorides—ammonium, barium, sodium, potassium, calcium, lithium, or magnesium—being available. But I find that those salts with a tendency to deliquescence are not only the most suitable, but also the most sensitive.

I have confined my observations this evening to a single salting formula; but this is by no means the limits of the process, as by varying the chemicals, as we do in ordinary printing, a great variety of effects can be produced, both as to colour, rapidity, and cleanness of impression; but I leave this to the hands of ardent experimentalists, confident that in the one perfect process which I will formulate there will be no trouble to practical men, and, at the same time, there is a wide field open to those who desire to pursue this path of experiment.

The oily surface which painters' canvas presents is the first difficulty which must be got rid of, and it is effected in this way: get your canvas ready, lay it flat on a board, sponge it over with spirits of wine, or carbonate of soda, or any other alkali, till the surface is free from all greasiness. Be careful not to rub the surface too much. Then wash clean with water. Make the canvas into a sort of dish by bending up the edges. Pour over the surface a solution of citric acid dissolved in spirits of wine; drip it well; when nearly dry, pour a solution of spirits of wine and chloride of calcium over the canvas for about five minutes, pour off, and allow the canvas to dry; when dry, float a solution of nitrate of silver of the ordinary printing strength for four or five minutes. I have printed canvas prints when the silver was only 40 grains, and found very little difference in the prints. Print in the usual way (do not print very deep), then fix with hyposulphite of soda; I have found that old or weak soda answers best. Toning with gold is quite unnecessary.

The following may be taken as good workable formulæ for this process:—

1st. *(a).—Solution for Washing Canvas.*

Methylated spirits and water, equal quantities.

Or,

(b).—Carbonate of soda or other alkali, quant. suff. in water.

2nd.—*Solution for Coating Canvas before Salting it.*

Methylated spirits	1 ounce
Citric acid	20 grains

3rd.—*Salting Solution.*

Chloride of calcium...	10 grains
Spirits of wine	1 ounce
Water	1 ,,
Gelatine	2 to 4 grains

4th.—*Silver Bath.*—50 grains to 1 ounce water.

Considerable latitude is allowable with these quantities.

Another way by which many modifications of colour can be got is to prepare the canvas surface as above. When washed and dried, the surface is to be chlorided by the application of a solution of the salt chosen, keeping the equivalent of chloride equal to about 5 grains of chloride of sodium to 1 ounce of water, and spirits of wine in equal quantities; add to this from 1 to 2 grains of either gelatine, starch, albumen, or similar organic substance, and add about 10 grains citric acid; float this on the surface as directed; then, when dry, apply the nitrate of silver, and print. The printing is much more rapid than ordinary paper printing, equal, I should think, to about one-third of the time only being needed for the canvas than for an ordinary quick-printing paper. I prefer, where possible, to use a large printing-frame, to ensure perfect contact with the negative and canvas surfaces, otherwise the usual want of sharpness and decision will be visible. This method of printing is applicable to direct as well as enlarged negatives, and the prints before you this evening include several of both kinds.

Much washing is not required, as the hypo does not penetrate into the impervious surface of the paint; indeed, in this respect, it is much like printing a transparent positive on glass.

I think I have now, gentlemen, said all that is necessary to enable you to produce prints of this kind, but, if not, I shall be glad to make any further explanations you may think necessary.

WET PHOTOGRAPHY WITHOUT A TENT.

[We subjoin some remarks on photography without a dark room, and a description of a very ingenious manipulating camera, which Mr. Whiting recently brought under our attention. The apparatus was exceedingly compact and complete, and admitted of neat and efficient manipulation without difficulty.]

Whiting's Photo-Camera-Lucida (Registered).

Dear Sir,—In accordance with your wish, I beg to send you the following description and particulars of the above-named photographic novelty, which you will, no doubt, easily recognize as the apparatus I had the pleasure of introducing to your notice a short time since, and which I have contrived for the (allow me to say) highly important purpose of working the wet collodion process in the field, or elsewhere, without the use of, or the least necessity for, any kind of dark room or tent whatever; and that, too, with the advantage (and I lay particular stress on this) of being enabled to employ chemicals of a much higher degree of sensitiveness than a dark room or tent will admit of, and thereby to increase the utility of the photographic art.

The photographic world is so accustomed to the use of a dark room, and to consider it as an absolute necessity in the wet process, that I fear your numerous photographic readers will not be inclined to listen patiently to any one who not only dares to question its utility, but to assert that it may be dispensed with, and with advantage to the scientific progress of the art. Their experience and belief are so contrary to this, and prejudices and habits are so tenacious, that it is not unnatural they should be disinclined to its belief. They will more likely be tempted to think that there must be some mistake—that either the writer must be totally unacquainted with the subject, or that he must surely mean the dry process, and not the wet one; but

> "There are more things possible
> Than are dreamt of in our philosophy,"

and I do hope that they will bear with me when I say, there is really no mistake at all in the matter, except it be on their own side, for I most assuredly do mean the wet collodion process, and not the dry one. As to my knowledge of the subject, I will merely say that I commenced its study on the introduction of collodion, in the days of poor Scott Archer, whose name and deeds should be "treasured up" in the memory of every living photographer. I have taken in, and read, every number of every photo journal that has been published in this country, as well as every other book on the subject; and I have endeavoured to make myself practically acquainted with it in every branch. I therefore claim to know something about it.

The simplicity of the "Photo-Camera-Lucida," which I am now bringing before the notice of the photographic world, will, possibly, lead anyone to suppose that it originated in one of those accidental thoughts that sometimes—spontaneously, as it were—spring up in the mind; but this is not the case. It is the result of years and years of labour and anxious thought on the subject. It is more than twelve years since I first took up the idea of contriving an apparatus for the purpose. The first one that I made I have by me still, and I can take as good a negative with it now as I could then, and as can be taken in any dark room or tent that exists; but it did not satisfy all the indications required, and, as is always the case in these things, with any one who is determined to succeed, I went on improving, and altering, and, in short, experimenting in every way, until I arrived at a perfect result. Even as early as 1862 the thing was sufficiently perfect to admit of my putting in a tender for the privilege of photographing the International Exhibition, and offering to comply with that ridiculously absurd decision of the Commissioners, "not to allow the use of a 'dark room' in the building;" but which decision, be it remembered (for reasons best known to themselves, and with so much unfairness to photographers generally, who, for want of time, were thereby prevented from competing for the privilege), they only withdrew at the eleventh hour.

I admit that for printing, &c., "dark rooms" are required; and, perhaps, for enlarging and copying, and a few other things, they may be needed. But for the production of portraits and views by the wet collodion process—either positives or negatives—I will prove they are not only unnecessary, but positively injurious—injurious alike to the "thousand-and-one" poor fellows who have to work in them, and the progress of the art.

Photography, perhaps, at best, is not a healthy occupation, but as at present conducted, with its confined and darkened rooms and tent, filled, as they are, with all kinds of deleterious fumes and heated air, together with the non-observance of regularity in regard to meals, &c., it is really pernicious. The carelessness, too, of the working bees in the photographic hive, in handling and messing with the poisonous chemicals in use, and the incredulous look they give you when you remonstrate with them, is really marvellous. But I suppose it is with these physical poisons as Pope says it is with the moral poison, vice, which, though we are accustomed to loathe at first, yet

> "When seen too oft, familiar with its face
> We first endure, then pity, then embrace."

The sad consequence is, that many a bright fellow is "cut off" in his youth, or is made prematurely old. Even now I have to mourn the loss of a clever young photographic friend, whose untimely decease has added another to the long and melancholy list of talented men who have fallen victims to our (not inappropriately named) "black art."

In the best regulated and appointed dark rooms the evils of which I complain are, no doubt, lessened, but they cannot be entirely got rid of; and, as these places, like "angels' visits," are "few and far between," the amount of harm that arises from the dark-room system is unquestionably enormous, and will, as long as the system lasts, act as a drawback to our otherwise delightful art. But "there is no cloud without a silver lining," and I am glad that my long study of this subject has enabled me to perfect a light-room system of working the wet process which, for comfort, economy, and quality of work, and an entire immunity from the evils inseparable from a dark room, must prove a boon to any one who has the good sense to adopt it. Of course I am not so simple as to suppose that photographers having fixed studios can be all at once induced to "leave the beaten track," and "step from darkness into light," but, at any rate, the fault shall not be mine.

With dark tents, however, for out door work, the case is much more hopeful, and I am prepared to make war with goodly courage against their continued use. Already their "funeral knell" is ringing in my ears. The want of a simple, and, at the same time, a thoroughly practical, apparatus for this purpose, and one in which the number of parts, and the weight and bulk, &c., are reduced to a minimum, has long been felt; and, at the important discussion as to which is the best process for the landscape photographer, the wet or the dry, which was recently held by the intelligent and earnest members of the South London Society, and in which the predominant feeling was decidedly in favour of the wet, discontent with the tents, &c., at present in vogue was unequivocally expressed. At the same time it is only justice to admit they had no idea of giving them up. How could they, being unaware that they could be dispensed with? Oh, no! they the rather inclined to their continued adoption by the aid of wheels, velocipedes, &c., and thereby sending one back, in imagination, to "Baby Land" and the time when the "pull behind" was the forerunner of the "push before" of the present day.

To me, the idea of a "lover of the photographic art" having to either "pull" or "push" his tent, &c., along a dusty road on a hot summer's day, or of his having to "ride his hobby" on a modern velocipede, is ludicrous enough; but the picture presented by him when arrived at his destination—if he ever does so—is a much more serious one. Having to erect his tent, unpack his chemicals, &c., and to cram himself into and to operate in a small space in almost total darkness, while he is being poisoned by the fumes of the chemicals he is using, and with the burning sun pouring down upon him without mercy, must be anything but a joke. I do not wonder that many an ardent photographer has given up the wet process in disgust, and taken to the more uncertain and less useful dry one; for, to say the least of it, the wet process worked in a tent must be a sloppy and troublesome affair.

I will now describe and explain my substitute for it:—

FIG.1

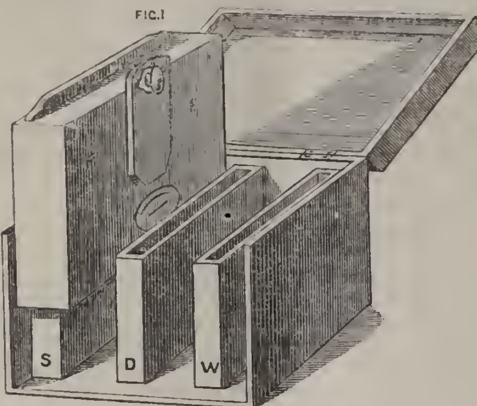
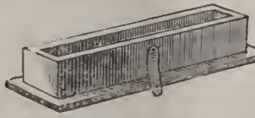


FIG.2



A mere glance at the above diagrams will, I think, enable any one at all acquainted with the subject to at once understand the plan I have devised. The thing is, in fact, so extremely simple, that it scarcely requires explanation. All sizes are made, from pocket size to 12 by 10.

Fig. 1. A box with its lid open. One of its sides is removed in the drawing, to show the interior. It contains three upright baths filled to one inch of the top with the solutions (S, silver; D, developer; W, water). The baths have water-tight covers (not shown). The box (though drawn too short) will hold the camera, fig. 2, and everything required for a day's work, but the tripod. P P is the plate-protector. It is shown as it appears when immersing a plate. It serves the double purpose of a dipper and a dark slide, and is, in fact, a perfect substitute for either a dark room or a tent, at home or abroad, and it is worth its weight in gold many times over.

Fig. 3 is a blotting-paper plug for insertion in the lower end of the plate-protector, to exclude light, the blotting-paper within it being kept in contact with the bottom of the wet plate by a slight spring. The glasses are a little longer in one of their dimensions than ordinary.

(To be continued.)

ON PAINTING IN WATER COLOURS;

More Especially in Reference to the Colouring of Carte de-Visite and other Pictures upon Albuminized Paper.

BY JOHANNES GRASSHOFF.[*]

In whatever form the water colours are obtained, whether in dry cakes in the usual manner, or in a moist condition in tubes (in which state they are more convenient to manipulate, and, therefore, generally preferred by painters), these can only be employed direct upon the photographs when the latter are printed upon matt and unglazed paper. The mode of painting such pictures by means of water colours does not differ in any way from the method described by me for retouching with black pigments upon matt paper, a variety of colours being applied instead of the violet black compound.

As the majority of photographs are at present printed upon albuminized paper, it became necessary to introduce a plan by which pictures of this description might be painted in water colours; the brilliancy imparted to the colours by the original gloss of the photograph produced a very pleasing effect, and this was considerably enhanced by the coating of the print with a suitable varnish, which had the effect of rendering the finished result more permanent, and of giving it the appearance of an oil painting or picture upon porcelain. For these reasons the employment of water colours has received considerable application in this direction. Besides, from the fact of pictures of this kind being generally of small dimensions, this description of painting forms a very interesting study, for with a certain amount of skill, acquirable after a little practice, creditable results may be secured in the most unexpected and rapid manner upon an albuminized basis.

The best method is to rub the colours upon a porcelain palette with a pretty strong solution of gum arabic, instead of water; by this means there is imparted to the colours a brilliancy equal to that possessed by the albuminized surface, an object of some importance, as otherwise the colours would be difficult to manipulate, and would not appear to advantage when laid on. In colouring large surfaces with a light tint it is necessary to increase the amount of gum employed, so as to render such spots sufficiently brilliant, and to allow of their subsequent manipulation with other colours. If enough gum has not been used, these surfaces appear dull in comparison with the other portions of the picture, and cannot be touched or mended without risk of the colour becoming dissolved off, thereby causing the formation of spots and imperfections. The colours necessary for the purposes of retouching I here enumerate; and as it is generally the case that a complete supply of them is not contained in the colour boxes ordinarily sold, I would recommend their being obtained separately in moist tubes, in which form they may be purchased at any large artist's colourman. They are as follows:—Permanent white, Naples yellow, light ochre, yellow ochre, light and dark cadmium, Indian yellow, carmine, fine madder varnish No. 2, cinnabar, burnt light ochre, light red, Vandyck brown, burnt sienna, burnt yellow ochre, umber, Cassel brown, sepia, ultramarine No. 1, Prussian blue, Paris green, bone black, and ivory black.

Some of these colours are very expensive, but such are invariably superior in tint, and it is therefore desirable that the cheaper kinds should not be purchased, as, from experience, I have found that they always bleach, or, at any rate, are liable to very disagreeable changes. Cinnabar and carmine are unfortunately not very genuine, but there are no other colours which can be substituted for them, and it is necessary, therefore, to procure both of them. Madder No. 2 is similar to carmine, and is more permanent than that pigment, but it does not always possess sufficient vigour, a requisite of importance in the painting of drapery, &c. Vandyck brown is a beautiful, genuine, and agreeable colour, but can only be used in shadows and secondary parts of a picture, as it is not endowed with the magnificent tone of the madder and carmine; at the same time, wherever it may be substituted for these last named pigments, the Vandyck brown should be used, on account of its being a colour whose genuineness can be perfectly relied upon. Many other colours of different kinds are to be had, but those herein mentioned are quite sufficient, and, by the judicious mixing and application of the same, every tint necessary in the colouring of photographs may be obtained.

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[*] Extracted from Grasshoff's work "On the Retouching of Photographs."

Let us suppose that we have to colour a photographic portrait of small dimensions—as, for instance, a carte-de-visite bust, which is a picture very well adapted for painting in water colours. A light print of a somewhat brown tone is chosen for the purpose, and brushed over in the first instance with a little diluted white of egg, it is then mounted upon a drawing-board, and placed upon an easel, in which manner it is more easily manipulated, a maulstick being likewise used if desired. At the same time, the work may be very well performed without the employment of either of these two last-named requisites, which are, in fact, only indispensable when oil colours are being laid on.

The background is first to be tinted. If the picture is a vignette, where the background runs into white, a light bluish tint graduating into brown towards the bottom is generally most suitable for the purpose; but it is necessary that the general colouring of the picture should first be considered before the application of the ground tint, in order that the latter may blend together with the more essential parts of the painting. Thus, in a lady's portrait it would certainly show some want of taste if the background were painted of a bluish tint, while the lady's dress was of the same colour; in this case a light green, brownish, or background of some other colour, would, of course, be more suitable.

The face is next taken in hand, the features being brushed over with a very dilute wash of burnt light ochre. This manipulation requires the exercise of great care, as the tint must be laid on smoothly and regularly, a little more gum being used for the purpose. According to the complexion of the original of the portrait, the ochre must be combined with a little burnt sienna for a brunette tint, or with a small quantity of light red for a delicate carnation tone; in many cases, however, the pure burnt ochre will suffice as a basis for the application of flesh tints.

In washing on these tints, it does not matter if the brush sometimes passes over the outlines of the portrait—as, for instance, upon the hair, &c.—as, after the tint has dried, the defect is easily remedied by removing the superfluous colour by the point of a clean moist brush. In the same manner the eyes and the high lights of the picture (on the forehead and nose of the portrait) may be improved, provided sufficient gum has previously been mixed with the colour when first applied. Too much brilliancy is always better than too little, as it is much easier to apply the colours upon a glossy than upon a matt surface, which has, besides, a very disagreeable aspect.

When the face tint has become dry, a very dilute colour is taken, consisting of madder with a suitable addition of gum solution (with which, for delicate female heads, a little white is combined), and the cheeks of the portrait painted therewith. This must be done very carefully, the strokes of the brush being so applied that they do not touch each other, as otherwise the point would remove or dissolve away portions of the colour, and thus cause the formation of very unsightly white spots upon an important part of the picture. The strokes of the brush must always be made in the direction of any marks and folds, the pores of the skin upon the face, which are sometimes very distinctly marked in a photograph, indicating the manner in which colours should be applied to the features. For colouring the hair a tint of medium depth should be used, and when this has dried the lights may be put in by the application of a little white to those parts, and the half-tones and shadows by laying on a deeper and more brilliant solution of the same colour. The strokes of the brush should, of course, run parallel with the direction of the hair. As the picture will gain more or less in beauty according to the manner in which it is coloured, care must be exercised in every manipulation, and too much paint must never be taken upon the brush whenever large surfaces are to be coloured.

(*To be continued.*)

DEVELOPERS AND DEVELOPMENT.*

BY CAREY LEA.

The first agent used for developing was gallic acid. In time it was discovered that pyrogallic acid was in many respects preferable. Again, protosulphate of iron was recommended. This last had great difficulty in making its way, but has finally come into general use, as giving a softer picture, and answering with less exposure than pyrogallic acid.

When sulphate of iron is used for developing instantaneous pictures, no restraining acid is employed, but simply a very strong solution of the iron, 80 or 100 grains to the ounce. Such a developer cannot, of course, be kept on more than a very short time, and the image once forced out, recourse must be had to redevelopment, or to after-intensification, to bring the image up to printing strength. Conversely, when a long exposure has been given, a good deal of restraining acid may with propriety be added.

Operators differ a good deal in their views as to the proper strength of the iron developer for ordinary exposures, using from 10 grains of sulphate to the ounce, up to 40 or more. The following proportion will be found to give good results:—

Winter Developer.

Sulphate of iron	3 ounces
Acetic acid	3 to 4 fluid ounces
Water	40 „

Summer Developer.

Sulphate of iron	2 ounces
Acetic acid	3 to 4 fluid ounces
Water	40 „

adding 4 ounces of alcohol if the bath be an old one.

It has been proposed at various times to place a very great number of various organic substances in the developer. Experience has shown that almost any organic substance may take the place of acetic acid as a restraining agent, and sometimes with advantage; for some of these substances have a remarkable power of destroying the tendency to fog, so that the iron developer can be kept upon the plate like a pyrogallic developer. Thus redevelopment becomes wholly superseded, and the picture is always finished at a single operation. The substance that possesses this property in the largest degree is, as shown by the writer, modified gelatine. The writer published several formulæ for this purpose, and the subject attracted at one time very great attention. Many experimenters went to work at it, and published formulæ of their own. Since publishing, some years ago, the remarks on the subject that gave the initiative to all that has been written, the writer has remarked that the quantity of sulphuric acid necessary to modify the gelatine is absolutely so small in proportion that it exercises no hurtful agency upon the development, and, consequently, it does not require to be removed by a subsequent neutralization. This brings the preparation of the collo-developer to a singularly simple form, as follows:—Take—

Common glue	6 ounces
Sulphuric acid...	¾ fluid ounce
Water	9 „ ounces.

Boil these together for a couple of hours in a flask, replacing the water as it evaporates. Then throw in an ounce of granulated zinc, and boil for an hour and a half. Add water as it evaporates, and, when done, dilute to 12 ounces.

This syrupy liquid has the most extraordinary restraining power. A single drop is sufficient for 3 ounces of 30-grain iron solution: 1 ounce, therefore, of the above gelatine solution is sufficient for 1,500 ounces of developer.

Two essential remarks remain to be made in reference to this process. It might be alleged that the restraining power is due to the sulphuric acid by reason of its powerfully acid nature; but the writer has, by careful experiment, demonstrated the fact that sulphuric acid does not tend to restrain development, but tends to fog. It is therefore clearly not the sulphuric acid that acts.

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* "Lea's Manual of Photography."

Again, it may be alleged that, by the long boiling with zinc, the whole of the sulphuric acid must have been removed by the excess of zinc present. But the presence of the gelatine checks the action of the acid on the zinc so much that it was ascertained by careful experiment that when the operation is performed as above described, at the end of a boiling of an hour and a half, only one-fourth of the sulphuric acid was neutralized. This was ascertained by weighing the zinc before and after the operation, and determining the quantity of sulphuric acid corresponding to its loss of weight.

The action of the gelatine in this case in checking chemical action presents a very striking analogy to its action in the development.

The collo-developer obtained by adding 1 drop of the gelatine solution, prepared as above, to 3 ounces of water and 90 grains of protosulphate of iron, develops rapidly and with less tendency to fog than the common iron developer. By somewhat increasing the quantity, the development goes on still more slowly, with still less tendency to fogging.

The Sugar Developer.—For the regular needs of the photographer, no developer can be better than the sugar developer. The writer uses a formula of his own, which he strongly recommends. It is as follows:—

In 32 ounces of hot water dissolve 10 ounces of protosulphate of iron. This is best done by letting a portion of the hot water stand over the crystals until it is pretty well saturated, pouring it off, and repeating it with a second and third portion. To this solution add 10 ounces of white sugar and 3 ounces of acetic acid No 8. This need not be filtered. It is the sugar developer in a concentrated form, and keeps indefinitely. To prepare for use, take—

Above solution	3 ounces
Acetic acid No. 8	2 ,,
Water	10 ,,

Filter.

It is, perhaps, an improvement to add a little sulphate of copper. An ounce or two of it may be added to the 10 ounces of sulphate of iron. With it, or without it, excellent results are got. The strength above given is suitable for winter, and may be diluted with from one-half to an equal quantity of water in summer.

Local Development.

It will occasionally happen that, after the deposit on a negative has reached a point such that whilst the denser parts have received all that they can bear consistently with giving full detail in the high lights in the print to be hereafter taken, the thinner portions or some of them might advantageously have more strength; that is, these thinner portions, though exhibiting fine details to the eye, may be thin to print properly. In order, therefore, to bring the negative into a condition to show the greatest possible transparency of shadow—that is, a clear rendering of details in the least illuminated portions—it may be very advantageous to resort to a local redevelopment.

This may be performed either before or after fixing. When done before fixing, there is more hope of adding to the details; when after, the operation can be performed more satisfactorily, because the operater sees far better what he is about. In the former case, although details not before visible may be rendered visible, yet it is doubtful if, within the limits of this operation, detail so brought out can be got up to printing strength. The proper hope of this operation seems, therefore, to be the bringing of visible details too weak to print, up to printing strength, and this is better done upon the fixed and washed negative. I shall, therefore, so describe it. It will be understood, however, that if preferred, exactly the same operation may be performed upon the unfixed negative, remembering that the same precaution as to light must be then used as in the regular development, otherwise fogging will ensue.

If the negative has been allowed to dry, it will be advisable first to go round the edges with india-rubber dissolved in benzole. The film must then be well wetted, is to be grasped by the left thumb and forefinger at one of its corners, and so held that those parts which are already fully dense shall be on the side of the plate farthest from the operator (in a landscape negative this will generally be the sky-side); the plate is to be tilted a little, so that this far side will be a little the higher, and a solution of pyrogallic acid, silver, and citric acid, such as is usually employed for redeveloping, is to be dropped upon those parts where the additional deposit is needed. The plate being very wet, this dropping of solution will produce circles, that slowly expand, and, as they cease to expand, wash down towards the edge near the operator, by reason of the tilting position given as above directed. As this takes place the operator holds the plate under the bath, and washes off the solution. If the parts nearest to the operator will easily bear the additional deposit that they get as the solution passes over them, the operator proceeds more deliberately; if they are already pretty strong, he washes off almost as soon as the solution spreads to them. A few seconds suffice to wash away the solution, when the operator recommences, and this is done as often as necessary, even up to six or a dozen times.

By this mode of proceeding, spots and stains are avoided. If the solution were left to rest on any one part, a circular spot might result, which would print lighter; but, with a little care, nothing of the sort need be dreaded, and the most satisfactory results can be obtained. The pyrogallic solution can be used pretty strong, but should be kept clear and colourless. The whole operation turns on not allowing the solution to be for a moment stationary anywhere, but washing it off as it ceases to spread, and recommencing. Of course, before washing, the greater part of the solution may be first drained off into the developing vessel.

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THE COLLODIO-BROMIDE PROCESS.

BY J. HENDERSON.*

On the Preparation of the Plate.

The one great advantage of the collodio-bromide process consists in no silver bath being required in the preparation of the plates, so that, after the plates have received a suitable substratum and the collodio-bromide has been prepared, the further steps are most mechanical and simple.

Believing, however, as I do, that the merits of our favourite process are still unknown to many photographers, I wish to bear my part in its advocacy, the remarks I shall submit being intended chiefly for those of us to whom the preparation of dry plates, at least without a bath, is a novelty.

The collodion, after receiving its share of silver, should be carefully decanted, or, better still, filtered through cotton wool. For this purpose a funnel may be used, the flat top of which is covered with a piece of glass and wet blotting-paper, and by not pouring in the sediment the rest passes through readily.

While this is being done, fill one or two flat dishes and a larger vessel with common water. Then take up plate No. 1, and, after dusting the surface, coat with collodio-bromide in the usual way. After draining, set aside while plate No. 2 is being coated in like manner. Then plunge No. 1 into the first dish of water; after No. 3 is coated immerse No. 2, and so on. By this means no time is lost.

The collodio-bromide does not flow so readily over the plate as plain collodion, especially when a substratum is employed; it also sets less rapidly than plain collodion, but a minute is quite sufficient, and no portion of the film must be allowed to dry, or an insensitive patch will result. It will thus be seen that large-sized plates must be coated and immersed individually.

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* Read at a meeting of the Liverpool Amateur Photographic Association, April 27, 1869.

After coating each plate, the lip of the bottle must be cleaned; and, should any sediment be present, it is advisable to use two bottles alternately. Should the film after a time commence to tear away in the operation of coating, the collodion must be thinned with a mixture of ether and alcohol, which should be at hand. Some operators pour *from* one bottle and off the plate *into* another, filtering and thinning the latter before using it for coating again, and this ensures greater uniformity.

Before putting the plates into the third vessel, and again upon removal after soaking, it is my practice to give each a quart of water on the surface. When all are immersed, pour away what remains of the collodion, filter the tannin bath into clean flat dishes, and have the drying box and rack at hand.

The tannin bath I use consists of—

Tannin	15 grains
Gallic acid...	5 ,,
Grape sugar	5 ,,
Alcohol	1 drachm

to the ounce of water.

The tannin should be filtered separately before adding the alcohol, otherwise the resinous part would be dissolved. The gallic acid may be dissolved in alcohol or boiling water.

Many modifications of the above may be used—some with advantage, as I shall describe hereafter.

The plates, after immersion in the tannin bath, should drain, preferably on a rack, and then be placed in the drying box, there to remain undisturbed till dry. I am inclined to consider a good drying box one of the elements of success in a "dry" process, the object in view being that the plates should dry quickly, without sudden variation of temperature, and out of the reach of dust and light; and, further, that some provision be made for carrying off the vapour.

When the plates are dry, the backs should be coated with some pigment of a non-actinic colour. This effectually prevents blurring under any circumstances. A convenient medium is annatto laid on with a brush. The addition of a little glycerine or sugar prevents the annatto getting too hard when not in use, and likewise renders its subsequent removal from the plate with a wet cloth easy. The use of collodion containing colouring matter as a backing is to be avoided, on account of the difficulty of subsequent removal and of the danger of a portion getting round to the front of the plate.

I may mention, in passing, that the backing furnishes a ready means of recording thereon with a pencil or style any circumstances connected with the preparation or exposure of the plate, as a guide in development.

The plates, being prepared and stowed away, will remain unimpaired for years, if the ordinary precautions be adopted in keeping them.

One difficulty which is sometimes encountered in preparing collodio-bromide plates consists of a mottled appearance of the film. This appearance operates the more detrimentally from the fact of the film being equally sensitive throughout its entire thickness. The fault is not inherent in this process, and various causes have been assigned for it. Its removal may, I think, be effected by one or more of the following remedies:—

1. When thinning, do not use too much ether with the alcohol.

2. Pour on from one bottle and off into another.

3. Pour plenty of collodion on the plate, do not go twice over the same part, and do not keep it on the plate longer than necessary.

4. A collodion containing an excess of the cadmium salts becomes gelatinous, and may produce the evil. It has been suggested by Mr. Bolton and others to use magnesium or to employ ammonium exclusively, but with what success I cannot state.

5. The evil may, doubtless, be corrected, to some extent, in the development, by bringing out the details of the image quickly, and fixing while yet faint and on the surface, and then intensifying with silver.

I have alluded to modifications in the composition of the tannin bath. Within certain limits an increase of tannin gives a resulting picture possessing more contrast, while gallic acid confers softness and greater sensitiveness. The grape sugar prevents any tendency which these crystallizable bodies may have to become brittle, and likewise assists in promoting a speedy development; and they all act mechanically in keeping the pores of the film open, without which the dry film is impervious to the developer, and insensitiveness results.

With this latter fact in view, I have been led to try the action of gum on the film, with such favourable results that I strongly recommend its adoption; and, since then, I learn that its good effects have been appreciated by other workers in this process.

Four solutions were prepared :—

No. 1.—Forty grains	gum arabic	to the ounce of water, adding one drachm of alcohol.
,, 2.—Fifteen ,,	gallic acid	
,, 3.—Twenty ,,	grape sugar	
,, 4.— ,, ,,	tannin	

Ten plates, having been coated and washed, were treated as follows :—

No. 1.—Original tannin bath, before described.
,, 2.—Twenty-grain tannin solution.
,, 3.—Old tannin bath, *washed*, and then gum solution.
,, 4.— ,, *unwashed*, ,, ,,
,, 5.—Gum solution alone.
,, 6.—Gallic acid, and washed.
,, 7.—Old tannin bath, washed, and then grape sugar.
,, 8.— ,, *unwashed*, ,, ,, and gum.
,, 9.—Old tannin ,, ,, then gallic acid, and washed.
,, 10.—Old tannin ,, ,, ,, ,, washed, and finally grape sugar.

They were exposed consecutively under a pair of stereo. lenses, and developed as nearly as possible under the same conditions.

No. 1 developed steadily and well.
,, 2 came out slowly and short of detail in shadows.
,, 3 quickly and well—not so intense as No. 1.
,, 4 quickly and intense.
,, 5 developed rapidly and intensified readily.

The gum plates, upon moistening, assumed an opaque, porous, and creamy appearance—developed almost like wet plates, and the deposit was of a peculiar non-actinic colour. The remaining plates developed as I expected—the gallic acid lacking intensity, possibly from over-exposure, the grape sugar coming out in half the time, and readily acquiring density.

I have made a new tannin bath on my old formula, adding thereto 20 grains of gum to the ounce, and hope to report further on another occasion. Meanwhile, I would say to those who have not yet adopted our process—Give it a trial; and to those who have—Try gum.

Correspondence.

OWNERSHIP OF NEGATIVES.

Sir,—In the case of ownership of a portrait negative, the matter seems to me to lie in a nutshell; for when the person desirous of a dozen C.D.V.'s or a cabinet portrait asks what you charge, you tell him, it may be, perhaps, six shillings, or it may be twelve. He orders (say) a dozen C.D.V.'s. You supply him, and, I take it, the matter ends there.

You may clean the glass, and take another person's portrait on it. If the person, when he gets the dozen cartes, asks for the negative, you would naturally make answer to him, "You have got all that was bargained for; if you had told me you would require the negative, I should have charged you very differently." Negatives are kept in stock to save the person having to sit over again. If the public had a right to the negatives, few photographers would desire to have the care and responsibility of keeping them, especially with a liability to an action for damages in case of accident to the negative. Therefore, I contend that what ownership there is lies with the photographer, and that if a sitter requires the negative, he must bargain for that as well as for the number of portraits he may want.—I am, sir, yours truly, W. G. Plees.

Bradford.

[The case seems to be, and certainly should be, as simple as our correspondent states it; but the unfortunate fact exists that it has been disputed, the sitter claiming property in the negative as a right. We do not believe that such a right could be maintained at law; but although proceedings have been repeatedly threatened, some compromise has generally been arranged without proceeding to extremity and obtaining a legal decision.—Ed.]

PHOTO-CRAYONS.

Sir,—I have for many years been working in water colours, oil, and crayon, as well as in photography, especially collodion on glass positives and transparencies, and often combined photography and drawing figures in transparencies on glass, backed by plain or tinted paper, landscape background, &c., but chiefly on white paper, coloured in water colour, or stumped in coloured crayons (my customers being fond of colour) when tinted or plain paper was used. The hatching was added when the background in the negative was too light. I hatched on the papers, backing with crayon when the negative had too dark a background. I hatched the negative for printing either on paper or glass, and applied this last method even to C.D.V. I enclose a specimen print. Another way I treated transparencies was to coat them with albumen, then colour them with liquid colours, hatching with blue or otherwise, and transfer the film to white paper: the colours become much brighter, and the surface very glossy, &c.

Now, sir, I am not one of those who are ready to dispute Mr. Sarony's patent. I fully agree with you, sir, that he has conferred a boon on photographers, and shall be happy to purchase his designs if I find they can be adapted to various positions, &c. I have worked extensively in chalk on stone, but it never struck me that such designs could be adapted to different heads until I heard of his plan. I believe he is entitled to protection. But, although I do not wish to dispute his claim, nor wish to inform the public that I have combined transparencies and crayons the same way before him, I should not like to be told by him that I must not do what I used to do, although I never published my way, on account of the opposition in the profession here. The work I have been doing will prove it. Hypo.

PS.—You have been asked whether the rapid rectilinear lens is rapid enough for cabinets. It is as rapid as half-plate portrait lenses used for that purpose, since they must be stopped down, whilst this need not.

PRACTICAL NOTES AND QUERIES.

Sir,—Will you, or some of your correspondents, give a little consideration to the following notes and queries:—

Strong and Weak Developers.—If a saturated solution of protosulphate of iron will produce a good picture, and a 5-grain the same, what is it that will give the developer the *par excellence?* I have used for several years only one additional ingredient, namely, acid. Now, I do not think we correctly understand that article as we should. What we should know is the equality of one acid to another; for instance, there is nitric, sulphuric, acetic, glacial acetic, tartaric, lactic, citric, hydrochloric, and formic, all retarding agents. Have these all been duly tested, and their effects recorded? One assistant I had, used 8 ounces of glacial acetic acid to 40 ounces of protosulphate of iron, 30-grain solution, but could not explain why; another used 1 ounce to the same quantity; and both produced the same quality of picture. Now, if the small quantity produced equal, the other must be so much waste.

Advantages of Dating Collodion.—Last summer, whilst travelling, I purchased at a chemist's a pound-bottle of collodion; it proved to be very good. Since then I have obtained some more the same date, quite equal to the previous sample.

Is albuminized paper good or bad according to the season in which it is prepared?—I am informed that the paper albuminized when eggs are plentiful, the spring, is superior to any other prepared at other times of the year. If this is so, now is the time to buy your stock. X. Y. Z.

HYPO FOR FIXING.

Dear Sir,—Seeing that you request further experience on the subject of fixing with hyposulphite of soda, I beg leave to state that, having some thousands of negatives, all of which have been fixed with hypo, ranging over a period of fourteen years, I have not one plate that is cracked. I have always been careful to finish the washing of negatives with water as warm as I could comfortably bear the heat to my hands.—Yours truly, J. Stokes.

28, Grey Friars Road, St. Peter's, Ipswich,
April 22, 1869.

MANIPULATING CAMERA.—ALCOHOLIC AMMONIA-NITRATE BATH.

Dear Sir,—Your favourable notice of my camera in the last number of the News induces me again to offer to show and explain the apparatus to any photographer or manufacturer who will call at my office, No. 81, Mark Lane (by appointment), in the middle of the day. We all, no doubt, think our own child the best; I certainly cannot discover any advantage over my apparatus in any that has yet come under my notice. I have no doubt your Yorkshire correspondent could work with the apparatus he describes, but, to me, it has the same defects as the camera invented many years since by Mr. Newton, the optician in Fleet Street, with which this is almost identical.

It is difficult to know what is really new, but I am inclined to think that a "dark chamber" similar to mine *was* new at the time I made it; and I think it is a simple and efficient method of preserving the negative from light during the manipulation. The *baths*, too, being used separate from the camera, is, in my opinion, an advantage.—I remain, dear sir, yours truly, Thomas Barrett.

PS.—Have any of your correspondents tried the sensitizing bath for paper that I sent to the News many years ago? I think it is described in the first volume. It is ammonia-nitrate of silver in alcohol—very sensitive, though only of the strength of 10 grains to the ounce. I think I can describe it from memory: put 80 grains silver into 1 ounce of water, and, when dissolved, pour in ammonia until it becomes clear again; then add 7 ounces alcohol. This can be used to the last drop. T. B.

Mead Vale, Red Hill, April 26, 1869.

[The ammonia-nitrate bath for albuminized paper, somewhat similar to that described by our correspondent, has not been used to our knowledge. A modified form of it has been used in the United States, but comparatively little in this country. We know that it gives admirable results, and very sensitive paper. We commend the courteous offer of our correspondent in regard to his manipulating camera to those of our readers who can avail themselves of it.—Ed.]

Proceedings of Societies.

Bristol Photographic Society.

A meeting of photographers was held at the Philosophical Institution, Park Street, under the presidency of Mr. Dunmore, of Chepstow, when officers were appointed for the above society.

The Lord Bishop of Gloucester and Bristol, who, having been applied to to accept the presidency of the society, had returned an encouraging reply, was unanimously chosen president, subject to his lordship's acceptance of the post.

Dr. Brittan, Dr. Budd, Mr. Ennel, and Mr. J. Beattie were elected vice-presidents; Mr. W. H. Barton, secretary; and Dr. Willett, and Messrs Phillips, Miles, Clarke, Willcox, Bark, Midwinter, and Dunmore a committee for the ensuing year. A code of rules was adopted in accordance with those which govern the proceedings of the North London Photographic Association.

The Bristol Society, which starts with between thirty and forty members, will hold its meetings on the fourth Thursday in every month. On the fourth Thursday in May Mr. Dunmore will exhibit, by means of the lime light, a series of transparent photographic views. Several members have already promised to read papers on subsequent monthly meeting nights.

Marseilles Photographic Society.

The monthly meeting of this Society was held on the 5th inst., M. Charles Tesseire in the chair.

The minutes of a previous meeting were read and confirmed.

After presentation of some *brochures* to the Society,

The Chairman, in thanking M. Vidal for his little work on Carbon Printing, comprising a practical *resume* of the various processes, gave a rapid sketch of its contents, showing how it tended to the popularization of carbon printing. He was satisfied that too much could not be done to bring into use this method of printing, which was alone capable of furnishing stable proofs, and the only one which amateurs could use with advantage; for, as M. Vidal had justly said, the process of heliographic engraving, however much improved, could never be anything but an industrial process, requiring both operators and apparatus specially adapted thereto. On the other hand, the carbon printing processes which were in the most advanced state could be turned to account without such intervention, and the results obtained possessed the desirable quality of complete stability. He then alluded to the actinometer of M. Arthur Taylor, to the explanation of which M. Vidal had devoted a chapter in his work. He recognized the practical utility of the instrument, so ingenious, and calculated to render such great practical services in carbon printing. He concluded by thanking MM. Vidal and Taylor, in the name of photography, for their unceasing efforts to aid the scientific progress of the art.

M. Vidal, in reply, gave a brief explanation to a question which had been addressed to him, on the subject of the omission from his work of M. Poitevin's process, which was based on the employment of powdered pigments with a mixture of perchloride of iron and tartaric acid, which became hygrometric in the parts attacked by the light. Aiming to make his treatise really practical, he did not think it necessary to mention processes requiring absolutely special applications, and which were not employed in the present printing practices. He had no doubt that, in the future of these processes, particularly in that of the bichromated gelatine, results much more regular would be obtained; but he wished to justify the word "practical," in connection with his treatise, by not occupying himself at first with any process to which that term did not apply. He thought it right to add that, seeing the rapid improvement in those processes, it was his intention to continue the work he had commenced by a supplement, and thus maintain his practical treatise in support of the science of carbon printing. He should feel grateful to those who could favour him with any special information, so as to enable him to render the work as complete and as useful as possible. There was, for instance, the method of operating adopted by M. Jeanrenaud in reference to the Marion process, and which merited the greatest attention; and M. Despaquis, on his part, communicated a new means of transfer and definite fixing of the image with gelatine coagulated by alum.

M. Taylor mentioned that Mr. Blair claimed priority in regard to M. Jeanrenaud's process, which had been previously described by him (Mr. Blair) in England.

M. Vidal read the communication made to the French Photographic Society on this subject by M. Davanne. M. Davanne thought it was right to claim for M. Marion the priority of employing the albuminized paper, and to show that M. Jeanrenaud published the same experiments as Mr. Blair, whence he concluded that, without knowing it, the two experimentalists had adopted the same means, and arrived at the same result. M. Davanne said he believed that it was not more just for Mr. Blair to make the reclamation against M. Jeanrenaud, than for the latter gentleman to do so against Mr. Blair.

The Secretary read the proposition made to the French Photographic Society by M. Davanne, in the name of the committee of management, and which had been adopted, that a special silver medal should be given in the year 1870, for the best process (not patented) for transferring the negative on a film.

The Chairman was happy that the French Photographic Society had taken the initiative of encouragement in that direction, and he was pleased to see thus sanctioned the many communications made by members of the Marseilles Society relative to this subject.

M. Vidal thought it would be valuable if the committee of the French Society completed the idea, by offering another prize, for the inventor of a pellicle as a substitute for glass, permitting negatives to be taken on it direct, without transfer.

M. Pellissier communicated some fine reproductions of engravings, the negatives of which had been obtained with the strontium collodion of Dr. Liesegang, which he praised, not only on account of its sensitiveness, but for the solidity and regularity of the film.

After some other business, the proceedings terminated.

Edinburgh Photographic Society.

This Society met in the rooms at 5, St. Andrew's Square, on Wednesday night, Mr. Slight in the chair.

Mr. Peter Lothian read an interesting paper on "Printing Photographs on Prepared Painter's Canvas and Similar Surfaces" (see p. 207). The mode of preparing and sensitizing the canvas was fully explained by Mr. Lothian, who showed several specimens of enlarged photographs printed upon the cloth, and ready for the artist to colour in oil.

A discussion followed, and the thanks of the Society were voted to Mr. Lothian for his paper.—*Scotsman.*

Liverpool Amateur Photographic Association.

The monthly meeting of this Association was held on Tuesday, the 27th of April, at the Free Library, William Brown Street, the President, Mr. O. R. Green, being chairman.

In accordance with a resolution of the previous meeting, a number of visitors had been invited, and the Lecture Theatro of the Museum was brought into use, in addition to the usual room of meeting.

The minutes of the last meeting were read and confirmed.

The Presentation Prints for 1868 were on the table for distribution to members The photograph that had been selected was "The Gleaners," printed by Messrs. Robinson and Cherrill, of Tunbridge Wells.

The paper of the evening, being the third of the series on the Collodio-bromide Process, was then read by Mr. John Henderson: subject—"The Preparation of the Plates" (see page 212).

Mr. Green said that Mr. Henderson's experiments confirmed the opinion of many photographers, that it was necessary to use a preservative of a nature that, when dry, would keep the film from contracting.

Mr. Wilson stated that in coating large plates it was advisable, in order to avoid mottling, to use an excess of alcohol in the collodion.

A vote of thanks was passed to Mr. Henderson on the motion of Mr. Wilson, seconded by Rev. T. B. Banner.

Mr. Charles Brown was elected a member of the Association.

The Chairman said that Messrs. Robinson and Cherrill, of Tunbridge Wells, had kindly promised to take during the summer an instantaneous photograph of a sunset at sea, of the large size of 22 inches by 15 inches, with the special object of presenting a print to the Liverpool Amateur Photographic Association, to be awarded in November next as a prize for the best instantaneous photograph, of a size not less than 40 square inches, taken by a member of the Association.

On the motion of Mr. Phipps, seconded by Mr. R. Cooke, a vote of thanks was passed to Messrs. Robinson and Cherrill for their kind offer.

On the motion of Rev. T. B. Banner, seconded by Mr. W. H. Wilson, it was agreed to have a photographic excursion to Gresford, on Wednesday, the 12th May.

This being the whole of the business, the members and friends adjourned to the Lecture Hall, where a large collection of photographs and other objects of interest were ready for inspection. There were upwards of three hundred prints exhibited, ranging from 24 by 18 to microscopic size. Many of them were very excellent specimens of the art, and some of distant places and objects particularly interesting. The principal exhibitors were Mr. O. R. Green, who showed a large number of photographs, his own work, and some of Braun's fine carbon reproductions from the old masters, together with a selection from a variety of sources.

Mr. John Henderson also exhibited a large number of excellent photographs, chiefly of architecture and scenes taken by himself.

Mr. Atkins contributed Canadian hunting scenes, and a revolving stereoscope.

Mr. Murray sent seven sheets of leaf and fern photographs, taken from paper negatives produced directly from the leaves and plants themselves. In the centre of some of the leaves, portraits were printed.

Mr. Hubback had a number of views taken in the Yo Semite Valley, California.

There were also shown a selection by Mr. Guyton, two of bunches of grapes given by Mr. Meredith, of Gaiston, photographed by command of the Queen, shown by Mr. Watling; and specimens of photo-crayons, shown by Messrs. Robinson and Thompson.

Mr. Lewis Hughes showed a number of excellent photographs, and next exhibited a number of lantern transparencies by the aid of the oxyhydrogen light. The most notable of these were some beautiful photographs of diatoms, by Dr. Maddox and others; one of the celebrated southern telescope, constructed by Mr. Grubb, of Dublin; a picture of the moon, taken originally by its aid; and another of the moon, by Mr. Warren de la Rue.

The proceedings closed with a vote of thanks to Mr. Hughes.

Talk in the Studio.

Worms for Stills.—Mr. R. H. Preston writes:—"I noticed a reply to a correspondent, some little time ago, that, unlike most of your answers, will, I am afraid, not help the applicant. It was a recommendation to use gas-piping for the condensing-worm of his still. I at one time concluded that this, as well as pewter and block tin, would do; but all three are worse than worthless. The steam dissolves the lead, or, rather, carries it in minute particles in suspension, so that the distillate shows, on settling, a scintillating deposit evidencing the contamination. Decanting is useless. It is well known that where steam is conveyed in lead pipes the angles soon get worn out by the friction of the steam. Tin rusts where cross-cut, and therefore 'block-tin worms and copper stills' do to sell only. Pray put 'Ignoramus' right at your earliest convenience. The only reliable thing is copper tubing *brazed.*"

Misapplication of Photography.—On Saturday, at Bow Street Police Court, John Harrison, of 13 and 49, Wycho Street, was charged with selling indecent books and photographic slides. The prisoner was committed for trial, bail being taken of two sureties for £200 each, and the prisoner's own recognizance for £100. A large quantity of indecent books and slides were seized on the premises.

To Correspondents.

R. S.—If you wish to protect your invention, the only way is to patent it at once; that is the only course by which you can secure it. Publishing it first will certainly prevent any one else patenting the same thing, but it will also debar you from obtaining a patent. In the specification or description of your invention, which you lodge at once, you will have to describe the principle of your invention; but you will have a few months to work out the details before the complete specification need be filed. 2. Your best plan will be to obtain the back number containing the process you require. It would not be quite fair to our readers generally to occupy space by repeating, for the accommodation of one reader, details which the majority of them possess in numbers recently published. You will, however, find an excellent article on the subject in question in the present number. 3. In the process introduced by M. Poitevin, to which you refer, perchloride, or iron and tartaric acid are the ingredients to be employed. 4. It is probable that you will find purchasing the iron salt easier than preparing it for yourself.

Eugenius Philallthes.—To secure copyright in the photographs, we believe it would be necessary to register each one, whether they were bound into a volume or not, provided the volume only contain photographs. Merely sending a copy of such volume to Stationers' Hall would not, we think, be of any service. There must be a personal delivery of a correct description of each picture to be registered, and the payment of the fee for each picture. 2. If the book contain any literary matter whatever, that will be sufficient, we apprehend, to bring it within the operation of the law of literary copyright, which is different in detail from the Fine Arts Copyright Law, under which photographs alone would be protected. Under the Literary Copyright Act, we believe, the photographs would be treated as illustrations to the book, and would so be protected. Under the Literary Copyright Act it will be necessary to send certain copies to Stationers' Hall, the British Museum, &c.; but this is a matter which your publisher will attend to for you: it is a part of his business. 3. The general tendency of the evidence which reaches us regarding the lens in question is highly favourable, and so is our own somewhat limited experience with it. 4. In enlarging by diffused light we prefer to place the negative so that the light from an uninterrupted expanse of northern sky reaches it. If it is placed absolutely facing the zenith, a good light is obtained, but there are certain disadvantages, in the shape of dust, &c., readily falling on the sensitive surface. If a clear expanse of sky is not obtainable, distant houses being in the way, place a sheet of white paper at right angles with the negative; this will considerably aid in reflecting light through the negative.

B. L. M.—The glass you forward is not well suited for the dark room. It is, in reality, of light brown, instead of an intense yellow or orange.

B. F.—There are various modes of intensifying fixed negatives. Those which you describe as thin, clean, and soft, but wanting in sufficient vigour for printing bright prints, will probably give the best results with pyro and silver. Moisten the film again, taking care, at the outset, that the hypo used for fixing is well washed out. Then apply a solution of 1 grain of iodine and 2 grains of iodide of potassium in an ounce of water. Rinse the plate, and proceed to apply the pyro and silver intensifier, taking care not to add too much silver so as to produce hardness.

F. F. T.—We have published many excellent salting formulæ for preparing paper for enlargements. One, giving a sensitive paper and fine rich prints, consists of 8 grains of iodide of potassium, 6 grains of bromide of potassium, and 3 grains of chloride of ammonium, in an ounce of water; excite on a 60-grain nitrate bath, and develop with a saturated solution of gallic acid containing a little acetic acid.

Troubled.—There is no help for the matter: with a south light difficulties are inevitable; but, by judgment and skill, they may be, to some extent, overcome. Your south roof light might, for summer use, be permanently obscured, either by tissue paper or starch, with advantage. For your side-light, make use of blinds of tracing-linen. This will sufficiently break the direct rays without obstructing too much light. But you must expect constant slight variations of the light, which will keep attention and judgment in constant exercise.

Probatum Est.—The manufacture of the tissue, permitting transfer for development, is protected by patent; but we apprehend that an amateur, preparing tissue for his own use, will not be prohibited. 2. For filtering gelatine solutions, a flannel bag is useful. 3. Gelatine solutions rapidly decompose, especially in warm weather. A little carbolic acid added will aid in preserving the gelatine from decomposition.

Printer.—The best plan to form an opinion of the colour which will be assumed by the print after fixing is to examine it before fixing by transmitted light. If the hypo be quite fresh and neutral, or alkaline, it will generally rob the print of a little depth of tone, making it slightly warmer than it was when it left the toning bath. If, however, the print, which looked black in the toning solution, assumes a rusty brown in the hypo, and remains so, something is wrong. This is occasionally the case when the paper is too highly salted. But the most common cause is the use of a very weak negative, which does not permit of a reduction of sufficient silver to form a good image without over-printing the lights.

An Amateur.—We have a letter for "An Amateur," whose letter on enlarged negatives appeared in our last. Please send address.

Payne Jennings.—Thanks. The second parcel duly arrived. The whole shall be noticed shortly. The amount was 2s. 8d.

Reviews and several Articles in type are compelled to stand over. Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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YELLOW LIGHT FOR THE STUDIO.

Amongst the preparations for the summer campaign in which every photographer hopes to be busily engaged, there is no step more important than a re-examination of the yellow glass in the dark room, the tent, or the developing-box. More than one case has recently come under our attention, in which the insufficiency of the adiactinic material has been a cause of general slight fog. The yellow glass or prepared fabric, which, during the dull winter weather, may have been quite sufficient to repel the actinic light, will often be found to admit the brighter and more actinic spring or summer light, and hence it becomes important to make a careful re-examination of the material used in the dark room or tent, to admit yellow light, to ascertain that it has not undergone any change during exposure which has rendered it less adiactinic.

Where it can be obtained, there is nothing better than the deep yellow glass flashed with silver. Such a glass is most impervious to actinic rays. The silver flashed glass, indeed, when of a comparatively pale yellow, is found to be sufficiently adiactinic for the photographer's dark room. In the absence of silver flashed glass, the aim should be to secure a deep orange tint, approaching scarlet rather than yellow. There is one kind of yellow glass which should be especially avoided: it is a pot metal, and has the appearance of a deep yellow, something like the tint known as Etruscan yellow; it is, in fact, really a light tint of a yellowish-brown, and it transmits actinic light in a degree much greater than, from its appearance, could possibly be supposed without careful testing. The deep orange-coloured glass, whether pot metal or flashed, is generally sufficiently adiactinic for the dark room.

The simplest test is, of course, to try the glass by exposing a sensitive collodion film for a few minutes to the glass, and then apply the developing solution. Care should be taken, of course, that the chemicals are in good order, to prevent fog, so that it may be certainly determined that any deposit is the result of light transmitted by the glass. If a sensitive plate exposed for a few minutes close to the window show no trace of fog or deposit on applying the developer, the glass is clearly sufficiently adiactinic, and a large amount of light may be admitted without risk to the plate in ordinary operations.

We were recently in a dark room having a south aspect, and apparently admitting a large amount of light. Its owner was asked if such a large amount of light was not dangerous. In reply, he asked his friend to look at the colour of the light at the end of the cigar he was then smoking. The dull red glow of the cigar appeared quite a white tint by contrast with the intensely orange-colour of the light admitted, and which was quite free from any trace of actinic quality as severely tested by a sensitive plate. No mistake can be greater than that sometimes made of reducing the amount of light instead of taking care to modify its quality. It is desirable to have plenty of light to permit working with perfect comfort, as darkness is never conducive to success. It is furthermore desirable that the character of the light should be as uniform as possible, and hence the dark room window should have a northern aspect. The apparent density of a negative varies considerably with the light by which it is viewed, and it is very difficult to secure anything like uniformity of results when developing with a constantly varying light. One of the most successful continental photographers—the only one whose Swiss work has in any degree rivalled that of Mr. England—always works by the light of a candle in his tent, accepting the inconvenience and incurring the risk in order to secure a light of constant quality to develop by, and so facilitate his chance of producing negatives of uniform printing quality.

Where the yellow glass in a dark-room window is found insufficient to exclude actinic light, a variety of resources are available. It may be supplemented by a covering of Smartt's adiactinic silk, or by two of Solomon's adiactinic muslin, so as to produce absolute opacity to actinic light. Indeed, white glass so covered may be safely trusted; or there are various yellow varnishes most effectual in excluding actinic light. Gamboge is readily soluble in most varnishes, and, applied to glass, will form an excellent medium, quite impervious to actinism, with the disadvantage, however, of eventually fading under the action of sunlight. Iodine dissolved in spirit varnish makes an excellent yellow adiactinic medium; how far permanent we have not evidence to determine. But perhaps the best of all varnishes, either to supplement doubtful yellow glass, or to communicate a safe yellow colour to white glass, is that first communicated by Mr. Aldis to our columns. It stands as follows:—

Raw sienna	1 part
Orange chrome, No. 3	1 ,,

These colours are obtained in tubes of the artist's colourman, as prepared for use in oil painting. They are thinned down to the proper consistency with turpentine and japanners' gold size, with a little patent driers to facilitate desiccation. Mr. Aldis states that two tubes of each of the colours, reduced by the vehicle to the proper thickness, will cover a window five feet by three feet, at a cost of one shilling and sixpence. This window will let in a flood of light without any chemical action whatever. Chrome orange is peculiarly adiactinic, and even when apparently somewhat faded by the action of light is still very impervious to chemical rays. A window of white glass first covered with yellow or orange paper, and then treated with two or three coats of this varnish, answers very admirably in a dark room.

Various other yellow and orange dyes are readily available, but care should be taken to avoid those which readily fade, as most of those of organic character are apt to do when exposed to sunlight. We have tried Mr. Breese's mode of making yellow glass, which consists in immersing a plate coated with plain collodion in a strong solution of saffron. This is a ready mode of improvising yellow glass, which is quite impervious to chemical rays; but it has the disadvantage of gradually fading.

AMMONIA FUMING AND VARNISHED NEGATIVES.

A somewhat interesting discussion as to the effect which ammonia, when used to fume sensitive paper, produced on the varnished film of the negative, occurred at a recent meeting of the French Photographic Society. M. Chardon stated that after repeated employment of a negative with carbonate of silver paper, in which it is necessary to treat both the paper and the pads used in the printing-frame with the fumes of ammonia, the varnished film was found to be completely ruined; it has assumed throughout a yellow tint, which made further printing almost impossible.

M. Schaeffner very naturally replied that ammonia fuming was not peculiar to the carbonate of silver paper, but was used by many photographers with ordinary albuminized paper; and added, that neither in his own somewhat lengthened experience, nor in that of others that he had ever heard of, had the ammonia produced any action on the varnish of the negatives.

M. Davanne suggested that possibly M. Chardon's negatives might have been treated with a varnish containing gum benzoin, which was readily acted upon by ammonia. Shellac varnish, however, might be safely used, as films treated with it might be left in contact with liquid ammonia for eight hours without becoming injured.

We fear that neither the answer of M. Schaeffner nor that of M. Davanne quite satisfactorily meets the case. It may be perfectly true that carbonate of silver paper does not stand in a worse position than ordinary albuminized paper, if the fuming be used with the latter; but if fuming be dangerous to the negative, it becomes objectionable under all circumstances, and the immunity of M. Schaeffner, and others he knows, does not afford much comfort if a possibility of danger exist. The knowledge even that the resin benzoin is most readily acted upon by ammonia does not quite meet the case, as the photographer generally uses a varnish of the composition of which he knows nothing. It may not contain benzoin, but it also may, and, therefore, with ammonia fuming he incurs a risk. We may further state that benzoin is a favourite resin with many manufacturers of photographic varnish. It is very soluble, very tough, very hard, and does not readily become tacky under the heat of the sun. It is sometimes used alone, and frequently added to varnish, in conjunction with other harder and more friable resins, in order to give toughness to the film. But we fear, further, that even the consolation offered by M. Davanne, as to the resistance furnished by shellac to the action of ammonia, is scarcely to be absolutely relied upon. M. Davanne is an able chemist and a trustworthy authority, and, in so far as shellac resists the action of ammonia better than most of the resins, his statement is doubtless correct. Shellac, however, is, like other resins, acted upon by ammonia, and dissolved by it. Indeed, in Mr. Johnson's recent modifications of the carbon process, the cement used for single transfer is shellac dissolved in ammonia. This forms a capital cement, absolutely impervious to moisture when dry. But if liquid ammonia will dissolve shellac, it may readily be believed that prolonged or constant contact with the fumes of ammonia may soften, and, possibly, decompose, the strongest and most perfect varnish.

These considerations suggest the important question as to how far the practice of using fumed paper by some photographers may have contributed to the destruction of the negative films, of which we hear from time to time; and how far it may account for the failure, in some hands, of varnishes pronounced perfect in all respects by others. At present the records of experience are too scanty to furnish a basis for judgment, but we commend the subject to the attention of our readers.

A VISIT TO SWAN'S CARBON PRINTING ESTABLISHMENT AT NEWCASTLE.

BY A CORRESPONDENT.

To make a journey of five hundred miles for the sole purpose of witnessing the details of a photographic process might appear to some an undertaking of questionable wisdom, the more so, probably, from the fact that the process inspected was neither new, nor recently improved by means of important modifications. In fact, the *modus operandi* carried on was, except in one slight particular, exactly identical to that adopted by Mr. Swan at the outset of his labours. And yet the fatigue and expense of travelling are well repaid, if by merely showing the spectator with what facility and certainty the process of printing in permanent pigments may be carried on. The method of manipulation I had often heard detailed, and the different stages of the operations clearly defined over and over again; but even the most concise statement of affairs could not divest my mind of the idea that the process must necessarily be an elaborate and complicated one, and it was not until I actually assisted at the performance of the several manipulations that I became fully aware of their simplicity. Indeed, to watch the progressive creation of the prints through the various phases cannot fail to produce in the mind of an eye-witness both pleasure and astonishment at the rapid manner in which the beautiful pictures are prepared. Thus, the carbon process is one of those few things which appear simpler in practice than in theory, and which to see is to believe.

The pictures which I had the pleasure of seeing prepared, under the kind guidance of Mr. Swan, were neither few in number nor of small dimensions, but large fifteen inches productions, printed and developed in rapid succession. Two of these, called "The Snooze" and "The Truant," were from monochrome pictures, painted expressly for printing in carbon, the copyright of them having been purchased by the Autotype Company for publication by the process. The carbon prints of these two subjects are very fine, and, when carefully finished and tastefully mounted, will go far to render this style of reproduction a favourite one with the public. Besides prints of this description, all of which left nothing to be desired as regards tone, softness, and brilliancy, there was a copy from one of the most successful portraits in last year's Royal Academy, that of a Scottish nobleman; in this instance, the original tint of the painting had been well imitated, and the texture of the velvet knickerbocker suit worn by the model was exceedingly well rendered. The power of modifying the tint of the finished picture by altering the composition of the pigment tissue is certainly one of the most valuable and plastic qualities of the process.

The new modification recently introduced by Mr. Johnson, by means of which the transfer by india-rubber is avoided, has not yet been adopted at Newcastle; the Johnson method will, probably, supersede the old plan, but the latter is by no means so difficult as is generally supposed. Indeed, when the employment of the press is done away with, as it virtually is at present at Newcastle, in order to bring the india-rubber surface in absolute contact with the image, the process as it stands seems as simple as it need be. The developed image upon the india-rubber paper is thrown into a trough of cold water, and there placed in contact with a wet sheet of gelatine paper, taken out and pressed together, by passing over them a scraper with india-rubber flange; when perfectly dry, the back of the rubber paper is very slightly moistened with benzole, by rubbing over a tuft of cotton wool impregnated with a small quantity of that liquid. The benzole permeates the paper film, softens the rubber, and allows of its removal upon its original basis of paper without injury. If too much benzole is used, the india-rubber is dissolved, and, although the paper leaves the surface of the image more readily, the latter retains some portion of the gum, which has subsequently to be removed. Moreover, if the rubber paper is separated intact, as when first applied, it may be again used for the purpose, and an economical saving thus effected. If the use of benzole is objected to on the score of its unpleasant smell or injury to health (its injurious character being, however, open to question), turpentine may be employed with equal effect, although with this material a short time must elapse to allow the liquid to permeate through the paper. A final rubbing of the surface of the picture after the removal of the india-rubber paper is all that is required to impart a polished appearance to the results.

As I before said, all the pictures produced in my presence were of large dimensions, and the number of these finished during my short stay certainly amounted to a hundred. Among all these, there was not one single failure, and, with the exception of two instances, no visible blemish or fault on any one of the prints. From considerable experience in the period of exposure, the printer was able to calculate the required time to a great nicety; but in instances of over and under-exposed, which, it is true, were very rare, great control could be exercised in the development, either by prolonging or curtailing the sojourn of the prints in the water, or by moderating the temperature of the latter, according to circumstances.

The tissue employed at Newcastle is manufactured in a sensitive condition, but a large batch has recently been prepared unsensitized for use by licencees of the Autotype Company. The gelatine used in making the tissue is of the best quality, and not, as insisted upon some time since in France, of ordinary commercial quality, or an admixture of glue and gelatine; the pigments are specially prepared and ground for the purpose.

Before taking leave of my hospitable entertainer, I was invited to inspect the laboratory used by him in the manufacture of his photographic preparations, and more especially to visit the apartment kept exclusively for the storage of collodion. The latter was well worth the trouble of examination, the quantity of liquid stored ready for use being exceedingly large, and contained in (rows upon rows) carboys of capacious dimensions.

MR. RUSKIN ON PHOTOGRAPHY AS A FINE ART.

BY STEPHEN THOMPSON.

The greatest art-critic of the age, whose utterances should always be received with respect and attention as those of an earnest and original thinker, worthy of the most attentive study—perhaps, most of all, where his readers most of all differ from him—has placed on record in his writings a decided opinion on the art claims of photography. As the passages in which his opinions are expressed may not be generally known, and will be interesting to photographers, I will epitomize them here.

Mr. Ruskin's opinion is not flattering, unless it be by implication; but it is far less so towards painters, whose claims he rejects almost *en masse.* He places photographers upon the *same* level with nine-tenths of those who affect to look down upon photography, as a mechanical pursuit. He does this, not by elevating photographers to the lofty plateau the others suppose themselves to occupy, but by pulling the painters down to the photographer's assumed level. To begin with, he demands a much more accurate definition of the word *art* than any now current. He says all that men do ingeniously is *art* in one sense; "strictly speaking, there is no such thing as 'fine' or 'high' art All *art* is a low and common thing, and what we indeed respect is not art at all, but *instinct* or *inspiration* expressed by the help of art."

Briefly, he denies to all art manufacture of any kind whatever, or by any means whatsoever, unless it possesses in some degree the inspiration of genius; is lit in some way by

"———the gleam,
The light that never was on sea or land,
The *inspiration* and the poet's dream"—

the claims understood by the ill-defined term fine art. He says emphatically, "It is no more art to manipulate a camel's-hair pencil, than to manipulate a china tray and a glass vial." "It is no more art to lay on colour delicately, than to lay on acid delicately." "It is no more art to use the cornea and retina for the reception of an image, than to use a lens and a piece of silvered paper." "But the moment that inner part of the man, or, rather, that entire and only being of the man, of which cornea and retina, fingers and hands, pencils and colours, are all the mere servants and instruments; that manhood which has light in itself, though the eyeball be sightless, and can gain in strength when the hand and the foot are hewn off and cast into the fire; the moment this part of the man stands forth with its solemn, 'Behold, it is I!' then the work becomes art indeed, perfect in honour, priceless in value, boundless in power." "Yet, observe, I do not mean to speak of the body and soul as separable. The man is made up of both: they are to be raised and glorified together, and all art is an expression of the one, by and through the other." "So that by the work of the soul, I mean the reader always to understand the work of the entire immortal creature, proceeding from a quick perception and large heart, perfected by the intellect, and finally dealt with by the hands, under the direct guidance of these higher powers."

As a further illustration of his meaning, he quotes a passage from Plato, *Alcibiades I.*

Socrates.—This, then, was what I asked you: whether *that which puts anything else to service,* and *the thing which is put to service by it,* are always two different things?

Alcibiades.—I think so.

Socrates.—What shall we then say of the leather-cutter? Does he cut his leather with his instruments only, or with his hands also?

Alcibiades.—With his hands also.

Socrates.—Does he not use his eyes as well as his hands?

Alcibiades.—Yes.

Socrates.—And we agreed that the thing which uses and the thing which is used were different things?

Alcibiades.—Yes.

Socrates.—Then the leather-cutter is not the same thing as his eyes or hands?

Alcibiades.—So it appears.

Socrates.—Does not, then, man make use of his whole body?

Alcibiades.—Assuredly.

Socrates.—Then the man is not the same thing as his body?

Alcibiades.—It seems so.

Socrates.—What, then, *is* the man?

Alcibiades.—I know not.

For those who wish to refer to the text, these opinions (which I made out and put together while searching Ruskin's works for other information one dark, foggy day in Venice, during the past winter) may be found in the "Stones of Venice," Vol. III., under the divisions "Grotesque Renaissance," and "Conclusion;" and in "Modern Painters," Vol. I., Sec. I.

In short, with Mr. Ruskin, means are nothing; the thing expressed, by whatever means, is everything. Painting is a language, with all its technicalities and difficulties, invaluable as the vehicle of thought, but by itself nothing. He who has learned what is commonly considered the whole art of painting, has as yet only learned the language by which his thoughts—if he has any—are to be expressed. He has done just as much towards being that which we ought to respect as a great painter, as a man who has learned how to express himself grammatically and melodiously has towards being a great poet. The degree of difficulty of acquirement of any medium of art expression does not alter the principle enunciated. "It is not by the mode of representing and saying, but by what is represented and said, that the respective greatness of the artist or writer is to be finally determined."

If this be the true theory, photography, if it can produce anything stamped with poetic thought, is equally entitled to the highest honours, and no detraction is to be made as to the means used to the end sought. This brings us to the *limitations* of photography. An artist will point out it cannot render *action*, *motion*, &c. Unfortunately, this is to a great extent quite true, and the limitations *are* great. But though it can do none of these things, I wish to point out that some of the greatest modern pictures are such as might have been represented by photographic means, *providing only* the *conception* had been forthcoming—the *inspiration*, the greatness, or nobleness, or pathos, of which Mr. Ruskin says determines its claim to be a work of fine art or not. I refer to that simple and touching picture, the "Old Shepherd's Chief Mourner." Mr. Ruskin himself, though often severe upon Landseer's "trivial mingling of pretty sentiment and caricature," says this is "one of the most perfect poems or pictures (I use the words as synonymous) which modern times have seen." Most of my readers will have seen, at one time or other, the engraving, and the pathetic power and poetry of the subject are independent of the picture; therefore the black-and-white translation will serve to illustrate my purpose and meaning.

It may be asserted that there is nothing in that picture that might not, at an expense of time and money and thought, have been worked out by photographic means, had the *conception* been forthcoming. The coffin, the trestle, the pall, might all have been constructed. A clever taxidermist would have stuffed a dog posed in that position—the only difficult bit in the picture. Small credit to him, with such a precedent to copy. The bowed head, the lassitude of the limbs, the tear (of wax) falling from the heavy eye, might all be imitated, and the rude interior, lighted somewhat *à la Salomon*, the light concentrated on the coffin-head and he dog, other accessories only indicated or thrown into poetic gloom. Hear what the art-critic says of the *details*, remembering how photography could also have rendered them, had the conception or inspiration been forthcoming: "The exquisite execution of the glossy and crisp hair of the dog, the bright, sharp touching of the bough beside it, the clear painting of the wood of the coffin and the folds of the blanket, are language—language clear and expressive in the highest degree. But the close pressure of the dog's breast against the wood; the convulsive clinging of the paws which has dragged the blanket off the trestle; the total powerlessness of the head, laid close and *motionless* upon its folds; the fixed and tearful fall of the eye in its utter hopelessness; the rigidity of repose, which marks that there has been no motion nor change in the trance of agony since the last blow was struck on the coffin-lid; the quietness and gloom of the chamber; the spectacles, marking the place where the bible was last closed, indicating how lonely has been the life, how unwatched the departure, of him who is now laid solitary in his sleep; these are all *thoughts*—thoughts by which the picture is separated at once from hundreds of equal merit, as far as mere painting goes, by which it ranks as a work of high art, and stamps its author, not as the neat imitator of the texture of a skin or the fold of a drapery, but as the man of Mind."

It is something to feel that so great a picture is at all capable of representation by means within the limitations of photography. Let us hope equally noble conceptions may have birth amongst photographers, and that they then may be able to say, without fear of being gainsayed—

"I, too, am a priest of the Beautiful."

GROUND GLASS TO INCREASE LIGHT.

As grinding the surface of glass is well known to destroy its power of transmitting light in an enormous degree, in some cases obstructing as much as sixty per cent. of the amount of illumination transmitted by plain glass, it is not a little singular to find ground glass suggested as a means, under some circumstances, of obtaining more light than can be secured by plain glass. We find, however, in a communication to the *Philadelphia Photographer*, that Mr. D. Duncan makes the suggestion with at least some degree of plausibility, the ground surface being regarded as a means of reflecting light into the studio when direct light cannot be obtained. He says:—

"It is not generally known nor believed by the majority of photographers, that exposures in the camera are remarkably short in studios which are lighted by ground-glass, yet it is a fact. Whether a studio glazed with ground-glass would work quicker than one glazed with plain glass only, I have not yet ascertained. Much, of course, would depend upon circumstances, *e.g.*, quality of the glass employed, &c. It is a problem I do not pretend to solve. The principal fault with most studios is that too much light is admitted. But for studios imperfectly lighted at the side by being built in a valley of tall chimney-pots, or in a garden surrounded by trees, or between the brick walls of neighbouring houses, the following is valuable:—

"If plain glass is used in the 'side lights' of studios situated as above, it will admit of very little light, that which it admits being only the reflection from the surroundings. Instead of using plain glass, let rough ground-glass be substituted; the rough side of the glass should be outside. The light from the whole of the visible sky and from the remotest parts of the opposite wall, &c., will be introduced into the studio, reflected from the innumerable faces or facets which the rough grinding has produced; the whole of the side light will appear as if the sky were beyond it, and from every point of this luminous surface lights will radiate into all parts of the room. Ye who strive to get art out of a 'well,' try it.

"The *Builder* recommends a similar plan for lighting a dark room in which the darkness is caused by its being situated on a narrow street or lane."

MANIPULATIONS IN PHOTO-CHEMISTRY.

BY JAMES MARTIN.*

Presuming that the place intended for the laboratory has been suitably chosen and conveniently arranged (not forgetting blinds for rendering the light non-actinic when so required), a supply of water, and some system of drainage, I proceed to describe the various manipulations, and the implements and appliances required for each as it comes under consideration.

Having selected the chemical required, if it be a solid, the operator, after calculating the quantity needed, must necessarily proceed to the manipulation of weighing. In many chemical experiments the quantities under examination are frequently so small, and their weights required to be so accurately ascertained, that a good pair of scales are as necessary to the photographer as a first-class pair of spectacles are to a person with defective sight; therefore the additional outlay such a pair may cost will be found money well spent. It is necessary to have at least two pair, viz., the grain scales (which generally weigh up to two drachms, and which should have glass pans), and a larger pair (which will weigh up to one pound). Those used by druggists, and having a pillar raised on a stand, are the most convenient. Great care should be taken to keep them in good order, and never to allow them to be overweighted, or they will surely be spoilt. A few words upon the philosophy of the balance will prove this, and perhaps be interesting.

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* Continued from p. 163.

The words *balance* (French), *bilanx* (Latin), literally construed, mean the double dish. A pair of scales for weighing substances consists of a beam or lever suspended exactly in the centre, having a dish or scale suspended at each end of it of exactly equal weights. The beam acts in a horizontal position, and is capable of turning upon its centre of motion. The extremities of the beam are called the centres of suspension. From these are suspended the scales, directly over the centre of motion; and midway between the centres of suspension rises a slender perpendicular stem, upon the upper surface of the beam; this is called the tongue, and which, when the beam is horizontal, points to the top of the handle by which the whole is suspended. In a properly-constructed balance the beam should rest in a horizontal position when the scales are either empty or loaded with equal weights, and any slight addition of weight put into either scale should cause the beam to deviate from the horizontal; this is called the sensibility of the balance. The arms of the beam should be inflexible, exactly similar, equal in weight and length; and, as long as possible, the centre of suspension of the scales and the centre of gravity of the beam should be all in one straight line, and the centre of motion and the centres of suspension should cause as little friction as possible. The box-beam is the best, as with this the scales, as well as the beam, rest upon knife edges. It is evident that the balance can only be in its highest state of efficiency whilst the centres of gravity and suspension remain in the relative position above mentioned; it will therefore hardly need my former caution to be repeated, that care must be taken that they remain so, and that the beam be never strained by over-weighting.

The names and relative proportions of the weights used have been so often mentioned that I need not recapitulate them. A decimal system has been proposed, which, if universally adopted, would simplify matters very much. At present, the practice of buying by one system, and mixing and compounding by another, the measuring of liquids whose gravity is higher, and weighing those whose gravity is heavier, then water—to this add the customary weights and measures of some localities of various articles—form a complete jumble, causing much confusion and inconvenience, laying the customer frequently at the mercy of the dishonest dealer.

Let me caution the young beginner against the slovenly habit of guessing the quantity of any chemical needed. I have seen this practised by medical men, who certainly ought to have known better. Such a habit must always lead to uncertainty of results in photographic experiment, and, in medicine, to much mischief. Neither should chemical substances be handled, but lifted with a piece of card, a bone or horn spatula, or a strip of glass; and it should be recollected that many chemicals act upon the blade of an iron palette or bolus knife, and, in some cases, are decomposed by contact with such, particularly if in a moist condition; therefore the use of iron instruments for lifting chemicals is best avoided.

The division of liquids into determinate quantities is effected by measuring. The various measures of liquids are derived from the gallon as defined by the laws of the kingdom, and divided by chemists as follows:—The gallon, pint, fluid ounce, fluid drachm, minim. The relative proportions are so generally known that I shall not repeat them; but I may here observe that the minim, which is the sixtieth part of a drachm, has been taken to mean a drop, which would prove a very indefinite quantity indeed, as the drops of liquids vary very greatly in size, according to the density of the liquid and the size of the neck of the bottle from which it is poured. Such a quantity would, rightly, never be prescribed. The measures in general use in chemistry are made of glass. The usual sizes are the pint, half-pint, four-ounce, two-ounce, one-ounce, and minim. Those of a tapering form, and mounted on a foot, are the most convenient, strongest, and easiest to be cleaned. The lip should be broad, otherwise, in pouring hastily, the contents are likely to be spilt. They are marked by divisional lines and appropriate signs upon one of their sides, and upon the other are parallel lines, to guide the operator in keeping the measure in level position. Should this be overlooked, the quantity of liquid measured will prove inaccurate. Should the measure be inclined forwards, there will be too little; if backwards, too much. Hot water should never be poured into glass measures until they have been well warmed, or they are likely to be cracked. They should be well cleaned after using, and kept for use placed bottom upwards, to exclude dust. Glass rods and strips of glass are useful and necessary to assist in mixing and dissolving various chemicals.

114, *High Street, Ilfracombe.*

ON THE EMPLOYMENT OF THE COLLODIO-CHLORIDE PROCESS AS A MEANS OF MULTIPLYING NEGATIVES.*

BY CARL HAACK.

In the preparation of the collodion it is necessary to employ a description of gun-cotton capable of yielding a perfectly transparent film when the solution is dry; Liesegang's papyroxyle is therefore suitable for the purpose. Of all the chlorine salts, that best adapted for admixture with the collodion is undoubtedly chloride of calcium, inasmuch as the same is capable of being dissolved in more than sufficient proportions in absolute alcohol; chloride of strontium, chloride of sodium, chloride of ammonium, and chloride of uranium, all yield inferior results, by reason of their insolubility.

In 30 cubic centimetres of absolute alcohol, 1 gramme of chloride of calcium should be dissolved, and in a further like quantity of the liquid 1 gramme of nitrate of silver. The silver is very difficult to dissolve; for this reason, 3 or 4 drops of water should first be added to the gramme of powdered nitrate, and then the alcohol poured to and fro into the mortar until the silver has disappeared. By a lengthened preservation of the solution, the salt will be found to crystallize out, and it is advisable, therefore, to employ the liquid freshly prepared. Besides these two solutions, there are necessary: a solution of 1 gramme of citric acid in 16 cub. cents. of alcohol, and 1 part of concentrated ammonia mixed with 6 parts of normal collodion; of pyroxyline so much is used as will render the collodion of a syrupy consistence.

It is by no means immaterial in what order the different solutions are mixed. In the first place, 35 cub. cents. of ether are taken, and in this is dissolved (adding a little alcohol if necessary) 1 to 3 grains of gun-cotton, or papyroxyle; 6 cub. cents. of the chloride of calcium solution is then added, and likewise a little alcohol in the event of any turbidity appearing. Thirty-five cub. cents. of silver solution is afterwards slowly poured in, the liquid being stirred the while, and the requisite quantity of pyroxyline (about 25 grains) dissolved in the mixture. For every 70 cub. cents. of liquid, 2 cub. cents. of the citric acid solution is finally added, and the collodion is then in a proper state for employment in the production of prints transferable upon porcelain or other basis. For the purposes of multiplying negatives, more opacity is required in the shadows of the diapositives, and this, as likewise increased sensitiveness, is obtained by the addition of 1 drop of the ammonia-collodion for every cub. cent. of the mixture. If by this means the film becomes grainy, only half the above quantity of ammonia-collodion must be added.

After the addition of ammonia, the collodion is dispossessed of its keeping qualities, and for this reason it is best to mix sufficient only for the day's requirements.

To prevent the separation of the picture from the glass, the latter should receive a previous coating of albumen; a quantity of pure white of egg is mixed with twice its volume of water, and a little ammonia added, beaten to a froth, allowed to subside, and then filtered. In the preparation of glass and transfer pictures, for which purpose the employment of albumen is unnecessary, it is requisite merely to cover the plate with a single coating of collodion; but in the reproduction of negatives it is better, when the first coating has dried, to apply another, so as to obtain greater opacity. The desiccation of the plates is best done upon a warm oven; when printed, they are handled in the same manner as paper pictures. They are thoroughly washed, and transferred to a weak gold bath, for it must be borne in mind that a strong solution weakens the impression. (A bath which has served on the previous day in toning pictures, and to which no subsequent addition has been made, is recommended for use.) The plates are next fixed in hyposulphite of soda, and then well washed; rinsing in water is insufficient, but lengthened immersion in several changes of water necessary.

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* Read before the Vienna Photographic Society.

From the glass positives produced in this way, and without being varnished, any required number of negatives may be printed off.

It is, of course, scarcely to be expected that negatives reproduced in this manner should present all the perfection of the original; nevertheless it is possible, by retouching the glass positive, to secure effects incapable of being produced by any other means, more especially when dealing with copies of old oil paintings.

The method here given of preparing the collodion is specially adapted to the production of negatives; if required for furnishing prints, it would, doubtless, be advantageous to make certain additions and alterations. Results furnished by the collodio-chloride are much superior to those obtained with iodide of silver dry plates, as, by employing the latter process, the more delicate gradations of tones are generally lost.

The quality of the collodion depends upon the presence in it of a notable amount of free nitrate of silver. The amount of chloride of calcium specified is so small that the silver is not taken up in anything like an appreciable extent; indeed, even the whole quantity of the chloride of calcium cannot be taken into account, as the gun-cotton prevents perfect precipitation. It is not necessary that the film on the plate should be perfectly opaque, for it is often astonishing how slightly turbid collodion will yield vigorous prints. The presence of the citrate of ammonia plays here, without doubt, an important role, producing an analogous effect to nitrate of ammonia, which, when added to the silver bath in ordinary printing, ensures the production of proofs of extraordinary brilliancy.

ON PAINTING IN WATER COLOURS;

More Especially in Reference to the Colouring of Carte de-Visite and other Pictures upon Albuminized Paper.

BY JOHANNES GRASSHOFF.*

The dark shadows of the head are now commenced, after the preliminary face-wash and the red upon the cheeks have dried. All these shadows are coated with a pretty brilliant red, consisting of burnt yellow ochre to which madder or Vandyck brown has been added. The mixture of these colours is regulated by the original colour of the face; sometimes cinnabar or light red must be used, more particularly when a light flesh-tint is to be produced, and the photographs exhibit very dark shadows, a defect which very frequently occurs. The delicate half-shadows now appear, under the faint wash first applied, of a brownish or greenish tone, according to the original tint of the photograph. It is in the treatment of these half-shadows that the painter in water-colour generally comes to grief, as he is apt to overpaint these portions of the picture, covering up the gradations with a coating of paint, which imparts a preponderance of colour to the face: for instance, if the coating applied is too yellow, the tint produced is too dark or too green, in which case the portrait has a sickly appearance; and the same effect is obtained by the employing too much blue, &c. Before, therefore, these half-shadows are tinted any further, a little violet-black (composed of Indian ink mixed with a little Prussian blue and Vandyck brown) is employed, to connect the deep reddish-brown shadows; and when this has dried, the other tints—yellow, green, red, brown, &c.—may be softly laid on. The mixture of these tints depends by rights upon the colour of the original, and should not be filled in according to the taste of the painter, as it is quite unnatural that one coloured portrait, whether of light or dark tone, whether brunette or blonde, should present the same series of tints as that exhibited by another portrait, the two being representations of people quite unlike one another in nature. Thus, a gentleman with a dark complexion is represented with the same tints upon the face—coloured, perhaps, somewhat darker—as a delicate lady of fair complexion; this being, of course, quite the reverse of the truth, inasmuch as the gentleman's countenance exhibited many more greenish-brown half shadows than that of the lady. This method of treating all portraits in the same style is one much in favour with painters in water colour; it arises from the fact that the greater part of the pictures are coloured from memory, or on speculation, so that faults and discrepancies very easily occur.

On the temples, under the chin, and often on the lower part of the cheeks, the application of a slight tint of blue is necessary. The lips are treated with a mixture of cinnabar and madder, a pale tint being first laid on, which is strengthened by subsequent manipulation; attention must be paid that the upper lip receives sufficient colouring, as in the photograph it is often of a very dark colour, and then requires the application of a thick coating of cinnabar mixed with white or carmine to render it at all presentable.

The eyes are carefully painted with suitable colours. Brown eyes, as well as some description of grey ones, appear quite dark in the photograph, and in colouring these features, therefore, one of the ochre colours must be used, which is applied first of a pale tint, and afterwards worked up until the required intensity has been reached. The same method must be adopted for blond hair, which is also reproduced in photography of too dark a hue. Sometimes the light reflected in the eyes appears much too bright and glaring, and the softening down of this effect is not accomplished without considerable trouble. By careless manipulation the eyes are often made to squint, and the likeness is thus greatly deteriorated; in most portrait photographs the light spot in the eye is too large, and to remedy this it is best to increase the size of the pupil, and thus render the spot more proportionate to the eye. With dark eyes it is often necessary to tone down the light with a grey tint in order that the white spot may not appear too bright and unnatural.

If it is necessary to employ body colours for flesh tints in order to improve the gradations from light and shade, or to soften down prominent marks and folds, these should be obtained by mixing together white (to which, as with all other colours, sufficient gum has been added) and burnt light or yellow ochre, or any other suitable colour, according to the kind of tone desired. As a matter of course, the fine character of the photograph often differs by the application of much body colour, but, unfortunately, their employment cannot be helped in working up inferior pictures.

High lights on gold and silver articles may be painted with muscle-gold or silver, or with a white pigment prepared in the following manner: a cake of ordinary white paint is placed in a small porcelain shell, and covered with water, in which condition it is allowed to stand for three or four days, the water being changed every four-and-twenty hours; by this treatment nearly all the gum or glue in the pigment is removed, and the colour becomes possessed of more body. The colour thus prepared is not so bright as it was formerly, but much better results can be obtained with it than with the more brilliant materials. Naples yellow may be treated in the same manner when required for the imitation of gold lights, or the prepared white may be used mixed with ordinary cadmium, and applied without any addition of gum.

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* Continued from p. 211.

In pictures containing costumes or uniforms one is often compelled to produce high lights upon a matt ground which has been painted in body colour; in such cases the colours are applied as they are found, in the cake or tube, without any addition of gum; but lights and effects of this kind must always be put in sparingly, as their production tends to render the pictures unquiet and to destroy its aspect, irrespective of the fact that colours so laid on possess a somewhat dull and disagreeable appearance. This effect may be avoided to a great extent by coating the finished picture with a brilliant varnish.

It should be mentioned, that it is generally best to coat drapery with the desired ground-tint as evenly as possible; a small softening brush may sometimes be used to effect this properly, and the painter will do well to lay on the colour in parts only at a time. When the ground-tint is dry the shadows may be put in by using a darker tint, or the lights brought out by the application of a more brilliant body-colour.

Rose-coloured, violet, and blue drapery are in general very difficult to paint, as in most photographs these stuffs are represented of a very light colour, or even of a pure white; in these cases the colours should be mixed of the requisite shades in small porcelain saucers, with a sufficient quantity of gum, and applied to the paper with a free hand and full brush, the strokes being made in a diagonal manner in such a way that one stroke is half-covered by the following one, the drapery or other objects being coated as evenly as possible. The sloping strokes of the brush facilitate the better distribution of the colour over the surface while the pigment is still wet. The transgression of the outlines and borders is a matter of little consequence when manipulating with these tints, as the superfluous colour is easily removed by a subsequent operation.

When the colours have dried it is possible that they may not appear sufficiently even throughout. The lighter parts are, in such a case, again retouched with a paler or rather thinner colour, until the surface has been rendered quiet and symmetrical, and then the shadows in the folds may be darkened or made more brilliant. And, finally, the lights are worked up with a pigment containing a little white in its composition, and, if possible, also some other bright colour, by which means the effect is heightened to a very great degree.

The backgrounds of pictures thus coloured can scarcely be left untouched, showing the violet-brown of the photograph; and even when the finished print has been worked up to prevent the appearance of an enamel or oil photograph, the beauty of the picture is much enhanced by a treatment of the background with pigments. In fact, any coloured picture would lose half its charm if the background of it were not suitably finished; for this reason particular attention should be paid to the elaboration of the background.

It is by no means an easy accomplishment to cover large surfaces with a nice even tone of colour, which has been mixed with a fair proportion of gum; a certain amount of skill and practice will always be found necessary, especially when several tints are required to be worked in, as, for instance, a yellowish green above, a brownish green in the centre, and at the bottom a brownish or reddish brown tone. For this purpose transparent colours are generally used, viz.: the so-called azure colours, as terra de sienna, Prussian blue, Cassel brown, Vandyck brown, &c.; and these are mixed in the ordinary way with gum, and diluted largely with water until the colours are of the proper tint. The employment of a softening brush will be found very useful.

To sum up, the best plan of proceeding is as follows:—The background is first washed in, then the tint on the face, the cheeks, and the deeper shadows applied, and afterwards the hair is coloured; when this has been done, the clothing is proceeded with, and after that the drapery and other secondary articles are taken in hand. When all the colours have been put in, the finer elaboration is commenced, beginning with the head, so that some scope may be left for the tone of the background; thus, if a more red, brown, or yellow effect is required, the background may afterwards be painted of a greener, browner, or yellower colour.

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WET PHOTOGRAPHY WITHOUT A TENT.*

Whiting's Photo-Camera-Lucida (Registered).

The mode of working is very simple, and the result is absolutely perfect if the exposure is properly timed. It is as follows:—

The box is placed on the ground or any other suitable place, the lid opened, the camera taken out and placed on its tripod. The view is now focussed, or it may be done while the plate is being sensitized. The baths are uncovered, and a plate is coated to within an inch of its upper end, and placed at once in the plate-protector, P P, while the latter is held in the hand; this is easily done, and the uncoated end of the plate is secured to the inside (of course) of the top of the protector by the tightening-screw. The plate is now immersed in the silver solution to be sensitized. This is done as seen in fig. 1, by passing the protector over and down the outside of the bath, S. The protector is now serving the double purpose of a dipper and a dark room, and there is no chance of the plate slipping off the dipper or any other mishap—not even fog—and yet the whole apparatus is in the open light, operator and all.

When the plate has remained in the solution the proper time, and the "grease washed off," as is done in a dark room, by moving it up and down, the protector is removed from the bath, and the blotting-plug, fig. 3, inserted in its place (the lower end of the protector). The protector, in its office of a dark slide, may now be taken to the camera and fixed to its back, the "shutter" drawn up, and the exposure given. It is now passed to the bath, D, the plug having been removed, and the picture developed; and then to the water bath, W, to wash the developing solution off, and if the tightening-screw be at this time loosened, the protector may be taken off, leaving the plate in the water; and as the upper end is just above the top of the bath, it may be taken hold of, and the washing finished by moving it a few times up and down. The picture can now be examined, and, if good, put it into the plate-box, and you may seek another view; if not good, you can take others till a satisfactory one is obtained, thus ensuring a good picture before leaving the spot, which, be it observed, can never be the case with the dry-plate worker, who is unable to discover an error until he has left the field, and, consequently, too late to correct it.

All this can be done in less time and with much less trouble than it has taken to describe it, and with the best results as regards the quality of the pictures taken. There is no building up or taking down, no difficulty to see or feel, or confinement of space, or anything; no stopping or messing of any kind, and no possibility of the chemicals becoming contaminated by admixture. There is a perfect immunity from fog or stains, and, in short, no drawback whatever. It can be carried as easily as the apparatus used by the dry-plate worker for the same sized picture. The wet process may now be worked in the field with the same facility as the dry, and with the advantage of knowing "what one has got."

The plate-protector is the grand part of the whole affair; nothing can be more simple or useful. It is a perfect dark room, slide, and dipper. The coated plate is easily placed in it, and, when once in, is free from danger; and it is perfectly protected from the injurious action of light while being sensitized, exposed, developed, and washed: nothing comes in contact with it but the solutions and blotting-paper; there is, therefore, no wonder that cleaner negatives are taken by this than any other means. By the bye, this reminds me of another "grand part of the whole affair:" Can pictures be developed by dipping? For this is the point upon which the whole thing turns. It is the question of questions. In my opinion, it is the most important one that can be broached in connection with photography. It is one that should be discussed in every photographic society. If answered in the negative, we must still go on with the "pouring on" or "dark-room system," with all its miseries and evils. "Talented men" must continue to "die in their prime," and "bright youths" must become "prematuraly old;" there will be no help for it. But, on the other hand, if answered in the affirmative, we may "leave the beaten track," and "step from darkness into light." On my own part, however, this question has no interest, for I have already solved it—solved it in the only way it or any other question can be solved, by experiment. I have experimented in every possible way, and my answer is, yes, and better than by any other way—that is, if you use my protector. I affirmatively settled the question years and years ago, and I have ever since practised it. If it had not been so, my photo-camera-lucida would not have been made, nor this article written. I cannot help expressing my surprise that photographers know so little about it. I was told by one years ago that it "could not be done," and I was told so yesterday. "Could not be done!" Why, I am sick of the words. Let them try, and, my word for it, they will find that it not only can be done, but better so than by any other way.

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* Continued from p. 210.

It is just in this way. When I began my experiments, I was told that if you immersed a sensitized collodion plate wet with free nitrate of silver in a vessel (say an upright bath) containing a reducing agent, the silver would be thrown down to the bottom of the bath. I doubted it (the latter part of it), but I tried the experiment, and found that it was so with an unexposed plate, but with an exposed plate the case was different. When the plate was exposed to diffused light, the silver did not fall to the bottom, but was reduced all over the plate; but if a plate was exposed behind a lens, as we do when taking a picture, certain portions only of the plate would be acted on by the light, and the silver would be reduced only on those portions, and as no more silver could be reduced than was present, you could not over-develop, keep the plate in as long as you might. This settled the question. You can over-intensify, but not over-develop. This is my principle, and on it I take my stand.

When developing a plate in a dipping-bath by the aid of my protector, the circumstances are most favourable for the production of a clean picture. The plate and the developing solution are, to a great extent, excluded from the air, and both are in total darkness, a condition of things to which I attach great importance, and there is, therefore, nothing to produce stains or marks of any kind, and there is no difficulty about the thing, or chance of a bad result, if you do not withdraw the plate too soon, and have given the right exposure. The developing solution can be used over and over again, and if you are working in a room (a light one, of course,) and are using one of my well-bottom-baths, holding half a gallon of solution, you may develop hundreds of plates with it, and when its power is exhausted there will probably be some reduced silver from the back of the glasses, which may be put aside for residues. Intensifying and fixing may also be done in the light—in baths, if you like—and thus this "light room" system may be, in every way, looked upon as one of economy and comfort

I will now, Mr. Editor, bring this article to a close, which I fear is already too long. Not that I have exhausted my subject; indeed, I have not done anything like justice to it; but I will recur to it on a future occasion, if you think it of sufficient interest to your readers. There is one other point, however, to which I must refer before I close.

By the interesting and important experiments upon the action of bromides in collodion, which have been carried on by Mr. Blanchard, a gentleman whose reputation as a practical and scientific photographer is well known to the photographic world. it would appear (as was stated by him at the South London Society on a recent Thursday evening) that by the addition of a certain amount of those salts, the sensitiveness of collodion would be so considerably increased as to require a proportionately increased strength of silver bath and developer to work in harmony with it; but—and this is the point to which I am referring—the subdued and non-actinic light of dark rooms, or tents, was much too strong for these extremely sensitive chemicals, for you could not get the developer to flow on quick enough to prevent fogging the plate; or, in other words, unless you worked in the dark (which, of course, you could not do) these extremely sensitive chemicals are no use. Your readers will, no doubt, anticipate me in what I am going to say: my "protector and baths" are exactly the things to do it by, for, at the same time that the operator is workin full daylight, the plate and the chemicals are in the total darkness required.

Our scientific chemists may now go on with their researches for a more exalted class of chemicals than those at present in use (I mean in regard to sensitiveness) without any fear of their labour being in vain, and we may expect that the time is not far distant when we shall be enabled to photograph badly-lighted subjects with a short exposure, and better-lighted ones instantaneously, a consummation devoutly to be wished.

We now see that the "photo-camera-lucida," with my "plan of working," is the very thing for the "wet collodion process," at home and abroad. But as the photographic world will, perhaps, object that it is hampered by protection, I will, in conclusion, observe, that having devoted so much time, labour, and money in its production, and seeing that by its adoption so large an amount of good will be effected as I have so feebly endeavoured to pourtray, I think they ought not to grudge me some little return for my labours.—I am, dear sir, yours obediently, Wm. Whiting.

26, St. Augustine's Road, Camden Square, N.W.,
April 15th, 1869.

ENLARGEMENT OF SMALL LANDSCAPE NEGATIVES BY THE SOLAR CAMERA.*

BY JOHN C. BROWNE.

It has long been the desire of amateur photographers to make small landscape negatives in the field, and, after having returned from the expedition, to have solar enlargements made upon paper of various sizes, obviating the necessity of carrying large cameras and bulky apparatus when travelling for pleasure. Formerly, it was impossible to depend upon such an arrangement, as the prints were very deficient in sharpness; but, recently, improvements have been made in solar cameras and photographic lenses, which give a result but little inferior to contact printing.

It is of the greatest importance that the negatives for enlargement should be first-class, of medium intensity, perfect sharpness, and fine detail. It must also be remembered that slight defects, such as would scarcely be noticed in contact printing, are much increased by an enlargement of ten or twenty times the original size.

That there is a prejudice against solar enlargements cannot be denied; but much of the complaint at the present time has originated by photographers furnishing negatives for enlargement entirely unsuitable for the purpose, not giving a good contact picture in a printing-frame. No apparatus can ever be made to give satisfactory results from such negatives.

Although not desiring to enter into a discussion as to which is the best form of solar camera, it is but justice to say that the views exhibited this evening were made from half-size negatives with a Shive instrument, by Mr. Albert Moore, of Philadelphia, who excels in that department of photography. Nineteen of these cameras are in constant use at his establishment, some of them of mammoth size, making a print 34 by 44 inches.

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* Read before the Photographic Society of Philadelphia.

Great care and attention are required to make good solar work. The focus must be exact, and, during exposure, the position of the box altered every minute, so that the sun's rays, passing through the condensing lens, strike exactly in the centre of the focussing lens. This is easily arranged by having two openings, through which the sunlight passes, cut upon the outside edge of the box, about twelve inches apart, and parallel with the focussing lens. By watching the spot of sunlight on a projection of the box, the apparatus is kept in the right position. Should it be allowed to remain stationary for several minutes, the focus of the condensing lens (altered by the position of the sun) will strike at an angle, causing a blurred image; there is also danger of fire. Intense negatives are often broken by the heat of the sun, as a long exposure is required. Good negatives should take about forty minutes to make a print.

PHOTOGRAPHIC EXPERIMENTS.

BY H. J. NEWTON.*

Having devoted much time within the last few years experimenting in photography, I have been led to read with much interest the experiments of others in the same branch of science. I have, however, observed that photographic experimenters exhibit a phenomenon peculiar to human nature; it may not be a defect, but it certainly is, in many instances, a serious impediment in the road to truth, or to correct results. I mean the effect upon the mind of a preconceived opinion, or, at least, a preconceived opinion expressed. The expression of an opinion appears to have a power such as nothing else has in shielding the mind; it sometimes seems like an impregnable fortress, into which the mind retires, and bids defiance alike to reason as to sophistry, whether in physics, metaphysics, theology, or geology; in fact, any subject upon which the mind can form an opinion appears to be subject to this universal law. I do not propose here to attempt an analysis of the reason why it is so, but only to set forth the facts so prominently that some experimenters may be induced to revolve in a larger sphere. I hold it to be the duty of all experimenters to seek wholly for the truth, and the best; not like, I am sorry to say, too many, who work, it would appear, only to defend and fortify some pet formula or process. It may be a legitimate offspring, or it may be an adopted child, only so that they father it, and the public recognize them as its proper and legitimate guardian. It becomes to them then, like the mother's firstborn, a wonder, a marvel, and they the parent of it! Such turn with contempt from anyone who is presumptuous enough to question the perfection of their little idol, either forgetting, or having never known, that human reason has not the prerogative of infallibility, or any way of arriving at infallible conclusions, except in one way, and that involves the necessity of reducing your problem to a mathematical proposition or its equivalent. It must be in a form susceptible of absolute proof. Those who have a monied interest in any secret or patented process are excusable for a certain amount of special pleading in behalf of their interests; but those who have no interest, except what pride or egotism suggests, have nothing to offer but the weakness and frailty of human nature; and it is a tacit acknowledgment that they are unequal to the conflict necessary to resist its unreasonable commands. Some have a particular process, old and defunct, which they periodically exhume and exhibit to the photographic public in an obituary notice, or what strongly reminds you of one. Such may possibly be ornaments to photographic literature, but they are rarely, if ever, useful. They are always eager to defend their hobby against any innovation; no rivalry is tolerated; they condemn everything that suggests any change or improvement; no amount of argument would induce them to change their formulæ or peculiar mode of operation. We have an example of such in those who deny the utility of bromide in collodion. They will have only iodide; they will not use a bromo-iodized collodion, or even try it; they claim to know more by theory than others can learn by experimenting.

I hold that no one has the right to deny or to call in question the claims of any one, when such claims are founded on actual experiments, or even to put them in unfavourable contrast with other processes which produce similar results, unless they have tested the correctness of the conclusions in the manner described in the particular experiment. There would, of course, be exceptions to this rule, in cases when statements were made in direct conflict with well-known and established physical laws. In dry plates, however, very little is known positively what is the exact thing in a solution that acts upon the sensitive film to preserve it; consequently, experimenters have a wide field from which to gather their material for experimenting. There is not enough known upon the subject for any one to tell what effect tea or coffee would have upon the plate without trying it, and so with a multitude of other vegetable substances. It would seem proper, therefore, in giving some results of experiments, to state the failures as well as results which are deemed successful. The tannin plate has usually been recognized as the standard by experimenters, as it was the first really good and successful dry plate. Experiments have not been made with a view of finding something which would keep a plate longer than tannin, but to find something which was as good a preservative as tannin, and, at the same time, possessed qualities which would enable it to retain its sensitiveness. A number claim to have succeeded in producing such plates.

I have tried almost every published formula, and I have no hesitation in saying that there are a large number of formulas which will, if carefully worked, produce plates superior, in every respect, to tannin. The keeping qualities, of course, can only be decided by time; it is a fair inference, however, that if a plate will keep through the summer months without suffering any detrimental change, that it is good for a year. The coffee plates have been kept two years without showing any change, which is much longer, under ordinary circumstances, than would ever be required. After a plate has kept well for a year, the fact that it will keep another adds nothing to its value. As I observed before, the effort of those experimenting with dry plates has been to discover something that would make them approximate as near as possible in their sensitiveness to wet ones. The great drawback to the tannin plates has been their great lack of sensitiveness.

(To be continued.)

Recent Patents.

PHOTO-MECHANICAL PRINTING PROCESSES.

BY ALEXANDER ARGAMAKOFF AND BASILE BAULER.

The following patent is for improved modes of securing photo-engraving, phototypic, and photo-lithographic printing surfaces. Unless we are in error, some parts of the principle of Mr. Woodbury's patent are comprised in this specification.

This invention has for its object improvements in the production, by means of photography, of printing surfaces adapted to lithography, typography, and chromotype. By application to lithography is to be understood the transfer of the drawing from the copper plate to the stone.

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* Read before the Photographic Section of the American Institute.

The improved method is based on the property, as yet practically unapplied, of gelatine, when prepared in a certain way, not swelling from moisture in those parts in which it has been acted on by light, and not melting when any hot liquid substances are poured on it, such as tallow, compounds of gutta-percha with wax, or any other substances capable of serving, whether directly or indirectly, the purpose of a matrix for obtaining a copper galvano-plastic plate. The method includes (a.) an application to litho and typography, (b.) an application to chromotype, and (c.) to printing from nature by means of gelatinous ink.

The first part of the method consists of the following ten operations:—1. Covering plate glass with a layer of gelatine. 2. Drying the gelatine layer. 3. Preparing the gelatine layer; *i.e.*, making it sensitive to light and incapable of dissolving when the gutta-percha is poured on it. 4. Exposing it to the light under a photographic negative or positive taken from an original, made with pen or pencil, in those cases when the drawing is to be on a reduced scale. When, however, the drawing is to be of the same dimensions as the original, I employ the original itself, if on thin paper. 5. Revealing the drawing by means of a moist surface, glue or gelatine. 6. Impressing the drawing on gutta-percha. 7. Increasing the relief of the gutta-percha plate by hand. 8. Obtaining the copper matrix. Operations 7 and 8 are omitted in those cases when, in order to obtain the printing surface, I make use of the photographic positive, or of the original executed on thin paper. 9. Obtaining the copper plate or printing surface in relief (*cliche*). 10. Increasing the relief of the copper plate or the *cliche* by corroding the ground.

The method as applied to chromotype consists of the following operations:—1. Obtaining an outline plate in relief (*cliche*) from an outline original. 2. Printing on paper from the outline *cliche* by means of a blue or other non-photogenic colour. 3. Preparing the originals for the simple colour contained in the drawing. And 4. Preparing, according to the above-described method, *cliches* for printing the simple colours separately.

The Method as applied to Lithography and Typography.

1. *The Gelatine Layer.*—I take 1 part of the best gelatine and wet it in 10 to 15 parts of water of the usual temperature, and at the expiration of a quarter of an hour I warm the water to 70° R. When the gelatine has cooled sufficiently, I add strong liquid ammonia, and cool it to a temperature of 30° R., and then pour a thin layer of gelatine on glass laid horizontally. The use of ammonia is indispensable in order to avoid a film when the drying of the glasses is produced very slowly, and also for the more convenient pouring of the gelatine on the glass.

2. The drying of the gelatine layer is performed in a dry air at the usual temperature, and is effected in one night.

3. *Preparing the Gelatine.*—In order to render the gelatine sensitive to light, and to make it incapable of melting when hot gutta-percha is poured on it, I wash the gelatine layer in a solution consisting of 1 part of bichromate of potass or ammonia, 3 parts of alum, and all this is dissolved in sufficient quantity of water. Previous to use the entire compound is diluted with 20 or 10 parts of water, and the gelatine layer is wetted during 1 or 2 minutes.

4. *Exposing it to the Light.*—The gelatine layer prepared in the above way is slowly dried in a dark room, and then, in order to obtain a printing surface, is exposed to the light under the original made on thin white paper, or under the photographic positive or negative, the use of the positive or the negative being dependent upon the circumstance that in order to obtain a copper plate the light must act on the drawing itself, and in order to obtain a *cliche* on the ground of the drawing. Care must be observed that there should be no dust between the gelatine and collodion layers, and after both the glasses have been placed in the printing frame and subjected to firm and equal pressure they are exposed to the light from one to twenty-five minutes, according to the strength of the light and the quality of the photographic glass.

5. *Revealing the Drawing.*—Those portions of the prepared gelatine which have been exposed to the action of light lose their capability of swelling from moisture, while the remaining portions preserve that capability. Therefore by dipping the glass with the gelatine layer in water it is possible to reveal the drawing, but by such means it is impossible to obtain anything fit for use, as the gelatine swells more in those parts where the drops of water adhere than in other places. This difficulty is completely obviated by pouring on the prepared layer of gelatine a thick layer of glue or gelatine simply dissolved in hot water and cooled to a temperature of 33° R., taking 1 ounce of gelatine to 4 ounces of water. When the gelatine thus poured on has cooled it can be easily taken off the prepared layer, when an excellent drawing is obtained, either in relief or hollowed out, according to which portion of the gelatine has swelled, *i.e.*, the one corresponding to the ground or to the drawing. Independently of this action, the moist surface imbibes the bichromate of potass in the parts not acted on by light, so that after the drawing has appeared the glass may be kept in the light, and whenever a moist layer is poured on it the drawing will be revealed, or, in other words, the glass may serve several times for obtaining the gutta-percha plate.

6. *Impressing or Transferring the Drawing on Gutta-percha.*—As soon as the moist surface is removed the following compound is to be poured on the glass, viz., 4 parts of wax, 1 part gutta-percha, and 1 or 3 wine glasses of oil. This is the most important point in the method. No one engaged in gelatine methods has been able to render the gelatine at the same time capable of swelling and incapable of melting from hot substances (and to make immediate use of the relief of the gelatine layer is impossible, as it quickly disappears entirely). This is why no one has practically availed himself of the non-swelling of gelatine, but only of its indissolubility in water after the action of light.

7. *Increasing the Relief of the Gutta-percha Plate.*—The relief obtained on the gutta-percha is not sufficient to admit of its being applied to the printing-press and to chromotype purposes; I therefore first hollow out by hand those portions in the gutta-percha which correspond to the large white spaces in the drawing.

8. *Obtaining the Copper Matrix.*—I then carefully cover the gutta-percha with blacklead, and plunge it into a copper bath, to obtain the copper matrix; and when the 7 and 8 operations are omitted, I obtain, not a matrix, but directly a copper plate or a *cliche.*

9. *Obtaining Copper Plates and Cliches.*—After having covered the copper matrix with turpentine and allowing it to evaporate, I slightly cover the copper matrix with blacklead, and again plunge it into the bath, in order to obtain the copper plate or the *cliche.* When the copper has become deposited in a sufficiently thick layer, I detatch the plate from the matrix. In this state the *cliche* is still unadapted to typography, it being necessary somewhat to raise the relief.

10. *Increasing the Relief by Corrosion.*—For this purpose the entire plate is covered with asphalte varnish, or any other varnish non-conductible to electricity. I then clean the varnish with charcoal from the raised drawing, leaving it on the ground. The drawing is then gilt, silvered, or is covered with other suitable substance; the varnish is washed off with benzine or some other suitable substance, and the copper ground is corroded with the aid of the galvinism, nitric acid, or any other acid which does not act on the layer preserving the drawing. The *cliche* is then mounted in the usual way.

The Method as Applied to Chromotype.

1. From a coloured original an outline drawing is prepared, and from it, by the above-described method, an outline *cliche* is made.

2. From this outline *cliche* an impression is taken on paper in blue or other non-photogenic colour.

3. On each such impression the portions corresponding to one of the several simple colours of the original are covered with indian ink, and thus originals are obtained consisting of spots.

4. From which *cliches* are made separately for each simple colour.

I consider it necessary to add, that the above-described method is quite original, although other gelatine methods are in existence.

In the process (*a.*) the operations marked Nos. 1, 3, 5, 7, 10, and the entire method of chromotype, have nothing similar in existing methods. If the substances entering into the solution in process No. 3 be taken in not suitable proportions, if the drawing be not revealed in the way described in No. 5, if the drawing be received on any other material but grease and gutta-percha as in No. 6, then the entire process not only loses its adaptability to typography, but becomes perfectly useless for practical purposes.

The Method Adapted to Printing from Nature by Means of Gelatinous Ink.

A photographic negative is taken from nature or from a painted original, and then, according to the above-described process, a metal plate is prepared in which there will be concave spaces corresponding to the shades of the original, which concave spaces will be deeper the stronger the shades are. The metal plate is covered with a thin layer of benzine or collodion, and when it is dry gelatinous ink is poured on it. The paper is then placed on the plate, and they are subjected to equal and strong pressure, in order to squeeze the ink out of the elevated portions. When the ink is quite dry, the plate is taken out of the press, and on the paper will be found an image resembling a photograph. For durability it is well to add to the gelatinous ink a small quantity of alum.

A PANORAMIC CAMERA.

BY JOSEPH RAINE.

This invention, for obtaining panoramic pictures, received provisional protection only :—

My invention consists in dividing the camera into two or more equal parts by means of a division so constructed as to produce a picture with a soft or vignetted margin, and an arrangement by means of which the camera, after one view has been obtained, may be moved through such a degree of space as to cause the margin of the second picture taken so to superimpose and unite with that of the first as to yield a panoramic view by the junction of the several pictures thus obtained. The method I employ to effect this softening of the margin consists in having a divisional partition in the camera, which division is composed of a metal or other band with serrated edges, and passing over two pulleys, one at the top and the other at the bottom of the camera. The width of this band is so adjusted that when a lens is fitted into each division of the camera and a sensitive plate is exposed when the camera is pointed at any uniform body, the serrated edge of the band, which must be moved by means of a handle attached to the axis of one of the pulleys over which it travels, shall so soften the edges of each picture as to produce a continuous effect of lighting. To apply this for taking a panorama the camera is made to rotate upon a table in such a manner that after a view has been taken on one portion of the plate by means of one lens, the camera is rotated a certain previously determined distance and the second picture is taken. By the arrangements now described these pictures will form a continuous panoramic view. The division may be so formed as to be easily removed, when the camera may be used for taking views or portraits of the ordinary kind. Instead of having a separate lens to each division of the camera, one lens only, fitted on a sliding front, may be used.

CORRECTING DISTORTED IMAGES.

BY JAMES ALEXANDER SMITH.

The alleged invention described in the following provisional specification is one of the very few which the patent authorities decline to protect, and even provisional protection was refused in this instance :—

This apparatus enables the manipulator to correct or avoid an inaccuracy in the existing mode of taking photographic images or photograms, by which foreshortening, and perspective, and the relative proportion of parts to each other are falsified, exaggerated, or distorted in photographic images or photograms as now and hitherto taken, and which inaccuracy is occasioned by the sensitized plate, or surface on which the image or photogram is taken, being a flat transverse surface, intercepting a cone of diverging rays at all the inequalities of distance from the focus of the camera lens as now in use, at which the various parts of the flat base of a cone are unequally distant from its apex. The means by which I correct this cause of inaccuracy in photographic images or photograms is by inserting a lens or lenses between the focus of the camera lens as now in use and the sensitized plate or surface on which the image, photogram, or impression is received and taken, and thereby, or by other optical means and appliances suitable for that purpose, redirecting the actinic rays or rays of actinic light into parallel rays, or as nearly so as may be, or into such other direction as, after the rays have passed through and diverged from the focus, will enable the image to be projected on a flat sensitized surface with its parts in the due or desired relative proportion to each other, or in more correct relative proportion than has hitherto been the case. I also propose to insert or introduce into the camera a diaphragm or opaque screen, with a small aperture in it, for the purpose of intercepting, by said diaphragm or screen, all, or as nearly as may be all, actinic rays which do not converge to or pass through the focus aforesaid, and thereby securing, as far as may be, the actinic efficiency and homogeneous purity of the colours or coloured rays proceeding from objects photographed, with the view of producing coloured images or photograms of such objects.

Correspondence.

EXCLUSIVENESS AMONGST PHOTOGRAPHERS.

Sir,—No disinterested person can read the various photographic journals for any length of time without being forcibly struck with the want of charitable feeling exhibited by certain professors towards their humble brethren of the art. Every new thing that comes up is prophesied and hoped to be too difficult of accomplishment by the cheap-and-nasty school, &c. It was the case with the cartes, the cabinets, and enlargements; and now Mr. Sarony's transparency is to be a regular poser—it will require such a vast amount of care and skill, and the developer will have to be mixed with such a large amount of brains, an article apparently monopolized by the gentlemen referred to. Meanwhile, the plebeians of the art jog along quietly, and no doubt get a good scraping off the bone, while the other gentlemen are struggling for the shadow. I observe, with pleasure, that those gentlemen whose works bring them prominently before the public, and who are really the upper ten in photography, show more consideration towards their inferiors, by never offensively alluding to them, whilst all may gain both pleasure and profit from their works and writings.

The insertion of this in the Photographic News will greatly oblige, sir, yours respectfully,

A Subscriber and Reader from the First.

Talk in the Studio.

The Photographic Society of London.—A new and revised list of members of the Photographic Society has been issued, from which it appears that the number is now 225, after the elimination from the books of the names of those who, by non-payment of arrears or other cause, had ceased to be qualified for membership.

Professional Photography in New York.—A paragraph in a recent number of *Humphrey's Journal* suggests a gloomy prospect for photographic portraitists in New York. It says: "Coming down Broadway the other day we noticed a bill on the store occupied by C. D. Fredricks and Co., with the significant words, 'To Let, First Floor and Basement.' These gentlemen have occupied these premises for eight years. Last year they let out half the first floor; now they will let the whole first floor and the basement, and occupy some of the lofts themselves. 'Straws show which way the wind blows,' and this movement on the part of Messrs. F. and Co. shows that the picture business in New York is at a low ebb."

Carbolic Acid as an Antiseptic.—Pagliari, an Italian chemist, says the *Artizan*, has invented a kind of paper wherein carbolic acid is so thoroughly incorporated that the paper, when used to pack animal substances therein, preserves the same in a fresh state without salt or any curing whatever. Probably its use for packing albuminized paper might prevent the change indicated by an unpleasant smell to which, in damp weather, albuminized paper is subject.

Importance of Names on Mounting Cards.—A correspondent says: "A gentlemen called upon me the other day. 'Are you Mr. ——?' 'Yes, I am.' 'Do you know this portrait?' 'I do; it is my production.' 'Can you tell me where the original is to be found?' 'I can; but first inform me how you became possessed of that one.' 'I received it in Bombay. I have written many times, but cannot get any reply or information to my letters.' I gave the address of the original, and a mutual recognition took place. Letters had been intercepted. Thus the advantages of a name upon the carte-de-visite mounts. Speaking of names on the mounts recalls a circumstance of a young lady destroying her carte-de-visite. She was sure they were not good, as the photographer had issued them mounted on cards without a name; her sister's and mamma's had names on."

Photographic Bible Illustrations.—The *Athenæum* says: "The late Mr. John Gray Bell, of Manchester, an untiring print-collector and book-hunter, devoted many years to the illustration of the Bible, by inserting in Macklin's folio edition above a thousand original drawings and photographs, and nearly 10,000 engravings, with 360 specimen leaves of old and rare editions of the bible. The result was sixty-three handsomely bound folio volumes, with double the number of illustrations contained in the famous Bowyer Bible of 45 volumes." The facilities presented by photography afford excellent opportunities for illustrating standard works, and adding to them a new interest.

To Correspondents.

A. Z.—The restoration of faded prints has repeatedly been attempted, but only with partial success. Immersion for a short time in a strong solution of chloride of gold is sometimes of service. Immersion in a solution of bichloride of mercury is also restorative. 2. The process of transferring the collodion film requires practice to secure success. We have repeatedly described both the wet and the dry method. As a rule, we believe the wet method is regarded as the most expeditious and successful. We have succeeded both ways. One important element of success is the use of a tough collodion of good body. We cannot repeat the process in detail in this column, but must refer you to descriptions which have been given in the News and the last two or three Year-Books. 3. Permanganate of potash would assist in oxidizing the last traces of hypo, and converting them into harmless sulphates; but, as it also discolours the whites of albuminized paper, it is not quite safe to use.

C. E. F.—Filter out the flocculent deposit, and the solution will be all right. 2. Sometimes tracing-paper, with or without clouds painted thereon, is placed in contact with the sky on the face of the negative, but most frequently at the back.

Muffographer.—We regret that we cannot efficiently help you in this column; you will see that we cannot with propriety recommend special dealers as supplying "the best" goods without making invidious distinctions. Our advertising columns contain announcements which will help you.

March.—A stop placed in its proper position between the lenses of a portrait combination has the effect of correcting distortion and securing straight lines. The same sized stop placed in front of the lens will, of course, obstruct more light, and make the exposure longer. In certain cases it has an advantage in flattening the field, and also in preventing the formation of a central spot of light in the negative.

Auric Chloride.—The necessity of toning the prints deeper in some cases than others, in order to obtain the same tint in the finished picture, is more frequently due to varieties in the quality or preparation of the paper than to varying formulæ employed in preparing the toning bath. It is also much influenced by the condition of the fixing bath. A new, strong, fixing bath, neutral or alkaline, often weakens the image, when a weak, old, or acid bath would cause the prints to retain the colour assumed in the gold bath, or even make it blacker. But the first is best. A good plan to secure genuine toning, and not the factitious appearance of toning assumed by some samples of paper, is to examine the print by looking through it. The colour it presents when thus examined before fixing is a good guide to the colour it will have when finished. Mr. Hughes's formula for the toning bath appeared in one of our Year-Books. As we answer this question when we are from home, and without means of reference, we cannot certainly say which. You will also find it, we think, in Mr. Hughes's Manual. 2. A print toned after fixing is not safe. Being subjected to the action of a chloride, a portion of the metallic silver image may be converted into chloride of silver, which, remaining as part of the picture, would assuredly darken under the action of light.

X. Y. Z.—We are unable to answer your question authoritatively, but we believe he is. As Mr. Sarony has elected to be paid for the use of his process by the purchase of the hatched vignette designs, we presume it will not matter to him whether each individual photographer purchases them, or whether some one executing work for the profession purchases them and supplies them together with the transparencies he produces from negatives sent to him. 2. You do not state the formula you employ, so that it is difficult to state in what point you err. A green and grey tint, instead of a warm black or brown, is often the result of short exposure and prolonged development, especially if an iodide be chiefly used in salting the paper. The best remedies are the addition of a little of a chloride to your salting bath, a moderately strong silver bath, and full exposure. When you use a strong silver bath, float the paper a short time.

Tom Hicks.—We will make enquiry; but it often happens that we do not know the names of advertisers to whom applications have to be addressed under their initials at our office, as they often call for the letters sent in reply. Possibly, as such a short time has elapsed, the matter is still under consideration.

E. Fisher.—The lens you mention is not quite suitable for taking interiors, especially where a wide angle has to be included. All single lenses give curved marginal lines, which, in an interior, are particularly objectionable. One of the double combinations suitable for stereo work, of which there are many, will answer best. See our advertising pages. 2. Golden syrup is a name given to a fine sample of molasses, having a golden tint in place of the olive tint which characterizes some samples.

C. R. (Holyhead).—We will make enquiry; and if we fail to find a suitable person readily, we will insert the advertisement as you wish.

Idoneous.—It is not necessary to print any announcement regarding registration, date, &c., on the mounts of copyright prints. The conditions of the Act are different from those which obtain in regard to copyright engravings. The onus of finding out that any picture has not been duly protected by registration is placed on the intending pirate, and he must take the risk of frequently making a mistake and becoming amenable to the law from his inability to distinguish between registered copyright pictures and those not so protected. The letter, with some remarks, next week.

Rolloy Fils.—Thanks. Your letter shall have full attention in our next.

Payne Jennings.—Received. Thanks.

Dr. Van Monckhoven.—Thanks for portrait and letter. The latter shall duly appear, with one or two remarks of our own, in our next.

We are compelled to leave over the Echoes of the Month and several other Articles until our next.

⁂ A necessary absence from home renders a little delay inevitable in answering some of our correspondents. Those whose letters do not reach us in time for answer this week will kindly excuse the delay.

Photographs Registered.

Mr. J. G. Smith, Gt. Grimsby,
Photograph of Group of Primitive Methodists.

Mr. J. Owen, Newtown, N. Wales,
Two Photographs of Dr. Slyman.
Two Photographs of Monuments in Montgomery Church

Messrs. W. Wilby and Son, Northampton,
Photograph of Eleanor's Cross, Northampton.

Mr. Heath, Plymouth,
Five Photographs of Rev. C. Wilson.

Messrs. Appleton and Co., Bradford,
Photograph of Titus Salt, Esq.

Mr. R. Fitt, Tunbridge,
Five Photographs of Mark Lemon, Esq.

Mr. T. Illingworth, Halifax,
Three Photographs of Rev. E. Mellor.

Mr. F. Downer, Watford,
Two Photographs of Lord Ebury.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

THE PHOTOGRAPHIC NEWS.

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THE NEW FINE ART COPYRIGHT BILL AND PHOTOGRAPHIC PORTRAITISTS.

We recently called attention to the provisions of the new Fine Art Copyright Bill introduced by Lord Westbury into the House of Lords, in which the rights of photographic portraitists are left in a somewhat anomalous and unsatisfactory state. The Bill was read a second time on the 30th ult., and a committee of the House of Lords was appointed for the 3rd inst., when it will be subject to such modifications as the evidence which may be brought before the committee may prove to be necessary or desirable. How far it is of sufficient importance for portraitists, either singly or in any combined form, to secure a hearing before the committee, is for themselves to determine.[*] In our conviction, photographic portraiture has become such an important art industry, and is surrounded by so many special circumstances which do not obtain in regard to paintings, that it imperatively demands a distinct and separate consideration and provision which should meet the equity of the case, and protect at once the photographer and his sitter. As the matter stands, the provisions made for the protection of the rights of the purchaser of a painting costing a thousand guineas apply equally to the sitter for the cheapest photographic portrait, and give him a facility for recovering penalties against the photographer who has supplied the portrait if he venture to sell, give away, or even exhibit a single copy of such portrait, or, to use the words of the Bill, if he "repeat, copy, imitate, or otherwise multiply, for sale, hire, exhibition, or distribution;" and these penalties may extend to twenty pounds for each copy so unlawfully produced, circulated, or exhibited.

That photographs might possibly require special and separate provisions, and that to their disadvantage, was suggested in a narrow speech by Lord Kimberley, who thought it was worthy of consideration whether it was desirable to give so long a protection to photographs as paintings and drawings. No voice was heard claiming any special care for photography. The Earl of Caithness, a skilful amateur photographer, and a vice-president of the Photographic Society, was possibly not present; but surely his name ought to have appeared amongst the committee appointed to sit in regard to a Bill which so nearly concerns the interests of photographers.[†]

We append a letter from an esteemed correspondent, who suggests that a special clause should be inserted in the Bill to prevent the perpetration of what have been termed the "twopenny piracies." As the Bill stands, the respectable portraitist is absolutely deprived of any remedy in such cases. If the copyright in a portrait, with proper limitations as to its use, were made the property of the photographer, all piracies of photographs, twopenny or otherwise, could be easily suppressed. We subjoin the letter in question :—

"PIRACIES.

"DEAR SIR,—I observe that a Bill to amend the law of copyright was read a second time in the House of Lords, on the motion of Lord Westbury, last week. Now, would it not be worth while trying to introduce a provision making the copyright of any photographic portrait, taken in the ordinary course of business by (say) Mr. T. R. Williams, making, I say, the copying of such by the "twelve for 2s. 8d." men an offence? What possible right have these fellows to step in and deprive Mr. W. or me of the profit we may legitimately look for from the demand for further copies?

"Only last week, a wretched thing was brought to me. 'Please, can I have a copy of this? *It* (!) was taken here.' On examination I found it to be a copy from a photograph done here, the original being a very good and brilliant picture. On the back of the coarse bit of pasteboard on which it was mounted was the address in type of one of these pirates. He had clearly done us out of an order for an extra dozen pictures, besides the discredit attaching to the wretched copy being supposed to be our production; and I have no doubt the reputation of many of my *confrères* is made to suffer in the same way. This man's proceedings are as nefarious as those of the parties proceeded against by Mr. Graves, but, instead of working in secrecy, he has the impudence to proclaim his robberies by open advertisement.

"It would follow that the nature and limit of copyright and ownership of negatives should also be strictly defined. Nothing can be more sensible or to the point than the letter of Mr. Plees, in a recent number of the NEWS, on this point, and it would but need a declaratory clause in the Act to that effect to settle the matter satisfactorily for all concerned. Were such legislation to take place, it would answer the purpose of the authorities to reduce the registration fee to a nominal sum, and of photographers of any standing to register *all* portraits. The extra copies we are now robbed of orders for would soon make up for the expense.—Yours truly, "G. R. FITT."

PERSISTENCY OF THE LATENT IMAGE.

REFERRING to our record of Mr. Fothergill's experiment in redeveloping the image in a collodio-albumen negative after all apparent trace of the picture had been removed by nitric acid, Dr. Van Monckhoven sends us the following commu nication. He attributes the formation of a persistent image, not destroyed by nitric acid, it will be seen, to the organic silver compound, and gives his experience as to the formation of a similarly persistent image in a wet collodion film, where the pyroxyline has been of a character to form in the bath an organic silver compound. Assuming this to be so, we find that the organic silver compound in Young's experiments was not soluble in the fixing bath of hyposulphite of soda, and from this we derive another confirmation of Mr. Spiller's statement, to the effect that albuminate of silver is not quite soluble in hyposulphite of soda, and that a silver compound remains in the whites of albuminized prints after fixation. Dr. Van Monckhoven's letter is as follows:—

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[*] We are glad to state that a committee to watch the Bill was appointed by the Council of the Photographic Society on Tuesday evening.

[†] The committee consists of the Lord Privy Seal, Earl Stanhope, the Earl of Carnarvon, Earl Somers, Viscount Hardinge, the Bishop of Oxford, Lord Portman, Lord Overstone, Lord Lyveden, Lord Westbury. Lord Houghton, Lord Romilly, the Duke of St. Albans, Viscount Stratford de Redcliffe, and Lord de Lisle and Dudley, the latter three names having been added to the committee since its appointment.

Vienna, April 26th, 1869.

Sir,—In No. 554 of your estimable journal I noticed the description of an experiment in which an image had been redeveloped upon a collodio-albumen film after the first image had been removed by means of nitric acid.

I would remark, that not only a collodio-albumen film, but every description of collodion prepared with gun-cotton manufactured at a high temperature, and especially very old collodion, would give rise to a similar result.

It is, indeed, an established fact, which I have already described at page 206 of the fifth edition of my *Traité General de Photographie*, that if an image developed upon a collodion plate is removed by means of nitric acid diluted with an equal volume of water, before it has been fixed, a careful examination of the plate will prove the existence in the film of an image yet remaining, not latent, but perfectly visible. This result is more decidedly produced when an old collodion is used, and its explanation is very simple. Theoretically, a sensitized negative collodion plate is constituted of pure iodide of silver impregnated with nitrate of silver; the iron reduces the nitrate of silver wherever the light has acted, but leaves the iodide of silver undecomposed. The nitric acid, in dissolving the silver from the surface, completely removes the image, and it cannot again be developed. Practically, however, this rarely takes place, because the gun-cotton which enters into the composition of the collodion decomposes into a resinous product analogous to resin, and therefore the sensitive film is not solely formed of iodide of silver, but of an argentico-organic body precisely similar to albuminate of silver. The iron solution in this case develops two images: one formed by this organic matter, being decomposed by the reducing agent, and insoluble in nitric acid; the other composed of pure silver, as in the preceding instance. When the nitric acid removes the second image, the first one still remains visible, and this will be the more distinct the older the collodion happens to be. The second image may, therefore, be redeveloped as in the experiment cited in your journal.—I am, &c., Dr. D. V. Monckhoven.

* * *

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The New Fine Arts Copyright Bill—Copyright of the Sea—Photographic Piracy—Field Manipulating Camera—Ammonia Fuming—Societies.

The new Fine Art Copyright Bill has possibly, by this time, passed through the committee of the House of Lords, where it was read a second time on the last day of the last month. An admirable Bill in its general aim and scope, it fails to do justice to portrait photographers, simply, I fancy, because no especial attention has been called to the special requirements of a branch of art industry which, being distinctly *sui generis*, and literally without parallel, cannot secure justice by being subjected to the general conditions which protect painting and similar branches of fine art. "What legitimate objection can the photographic portraitist make to this Bill?" was a question put to me the other day. "You say," added my interlocutor, "that it gives to the sitter the copyright in his portrait. Surely no one has so great a right to the copyright. A man should have as much property in his face, or the shadow, as in his ideas, and no one disputes an author's claim to copyright in his ideas. If the copyright in portraits vested in the photographer, he could publish the portraits of his sitters and make a trade in them, not only without their consent, but against their protest; and, further, if it be right that I should acquire copyright in a painting for which I pay a thousand pounds, it must be equally right that I should acquire a copyright in my portrait for which I pay a guinea, or even half or a quarter of that sum."

All this sounds very plausible indeed; but I had to point out to my friend that it did not really touch the difficulties of the case. It is, of course, obviously right that the photographer should not have a right to publish and make a trade of the portraits of his sitters against their wish; but it is not less obvious that the photographer should not be placed so completely at the mercy of his sitter as it appears to me he is placed by the provisions of this Bill. If I understand it aright, the photographic portraitist who shall print a single copy of the portrait of any sitter, besides those executed for the sitter, and shall either sell, give away, or even exhibit—mark this!—such print, is liable to a penalty of twenty pounds for each copy so unlawfully used. Such a law fully carried out might soon be made to ruin half the photographic portraitists in the kingdom. It appears to me that it must of necessity at once put a stop, in a great degree, to a large and important branch of photographic portraiture as a trade, one which is lucrative to photographers and interesting to the public; I mean the publication of the portraits of public characters. These, in some instances, are induced to sit purposely for publication, and in such case no difficulty would arise; but, in many other cases, the sitter, having obtained a photograph for his own use in the ordinary way of business, when asked if the portrait may be published, gives a ready consent. Under the provisions of the new Bill such permission will be useless. The copyright belonging to the sitter, he must assign it legally by a proper instrument in writing, and until he has done this the photographer cannot publish without the risk of which I have spoken. It is scarcely necessary to say that in by far the greater majority of cases the photographer could not ask for nor receive any such assignment. Take the case of the Queen, for instance. Her Majesty, with her family, has been almost a fortune to photographers; and, as a rule, has very graciously given consent to the publication of her own and the royal children's portraits. But imagine any photographer asking her to assign to him, legally, by an instrument in writing, the copyright of a portrait he has just taken! There are many other very strong reasons why the copyright of his work should be vested in the photographer, with, of course, proper protection to the sitter; but I must not occupy more space in dilating on the subject. I wonder whether photographic portraitists will take steps to protect themselves by petition, or by offering evidence in committee; or whether they will awake when some one of them is punished seriously by the operations of the Act, and then protest vehemently against the iniquity of the law, when it is too late to remedy it.

Speaking of copyright reminds me of the letter by Mr. Robinson, which appeared recently in your columns, on the copyright of the sea, and the droll attempt of the military to protect that copyright. In the *omnium gatherum* which constitute a standing army there are to be found, as a matter of course, all degrees of intelligence; but surely, in a corps like the Royal Artillery, supposed to receive specific education in the army, and possessing undoubtedly amongst them some able photographers, one scarcely expects to meet with such crass stupidity as Mr. Robinson records. Your comic contemporary, *Fun*, has some remarks on the subject, which, with your permission, I will quote. *Fun* says:—

> The Photographic News contains an amusing letter from Mr. H. P. Robinson, of Tunbridge Wells—one of the kings of the

camera—which is highly amusing. It relates how that gentleman, at Newhaven, anxious to take a photograph of the view seaward, chanced to select as his site of operations a bit of shingle belonging to Government. A stolid sentry, backed up by an obtuse bombardier, ordered him off. He moved to a jetty a few yards away, which was not Government property, and found that, whereas, at his former pitch he could only record the toss of the ocean, here he could, unrestrained, take photographs of the coast defences. As an instance of the stupidity of military machines, the story is amusing enough. But Mr. Robinson makes it a text for some suggestions so excellent that we venture to repeat them.

> Why, he asks, should not officers in the army—and, we add, especially in the Engineers and Artillery—receive a sound training in photography—an art which makes such rapid strides, and might be so useful in the field? The electric telegraph has been pressed into the service of the army, and the camera would be scarcely less useful as an ally. Moreover, by being told off to assist at photographic campaigns, possibly, sentries might, in time, come to a better understanding of the workings of the art, and would not, therefore, hunt the photographer (and possible spy) from a site whence he can take nothing but the sad sea waves, to a spot which gives him a fine "sitting" of our coast defences.

The success which has attended the vigorous prosecutions by Mr. Graves must, we think, issue in the extinction of piracy. The wholesale pirate whose case was pending when I last wrote, was convicted; and the penalty imposed, it is not improbable, may bring upon him the ruin he so plaintively deprecated. Pecuniary penalties, and imprisonment in default, are not the only forms of punishment, it appears, to which piracy may subject a man. The case of Coleman, Lawrence, and Hooper, charged with conspiracy, was heard at the Central Criminal Court a few days ago. Coleman pleaded guilty, and was discharged on his own recognizances; Hooper was found not guilty; but Lawrence was found guilty, and sentenced to twelve months' hard labour.

The advantages of a field manipulating camera, to which attention has recently been called in your pages again, have. there can be little doubt, been strangely overlooked; chiefly, I believe, however, because such instruments have not been found in the market ready for use. Every one of the very few photographers who have tried this mode of working speak highly of its convenience and of the satisfactory character of the results. I have seen the very ingenious camera described by Mr. Barrett in your pages some years ago, and have heard Mr. Barrett speak of it as really without a drawback of any kind. I feel satisfied that if some enterprising manufacturer would introduce such a camera at a reasonable price, it would become a favourite with all amateurs who are content to produce small pictures. About half-plate size is, I think, the largest picture which could be conveniently worked in such a camera.

From the examples of collodio-chloride printing I have seen produced on fumed paper by M. de Constant, I should strongly recommend your readers who use collodio chloride of silver to adopt his plan, and fume the paper with ammonia before printing. The increased vigour and richness of the image, and the peculiar velvety character of the blacks, which result from the fuming, much more than repay any extra trouble involved. The only drawback to fuming is the possible injury to the film from the action of ammonia. Theoretically, this danger does seem a possible and serious one, but as the practice of fuming has been kept up for some years without any record of ruined negatives, I think the danger may be regarded as comparatively chimerical.

The meetings of societies have been interesting during the month. At the Parent Society, Mr. Brown, of the Royal Arsenal, gave an interesting lecture on gun-cotton which was illustrated by several elegant and very successfully conducted experiments. Although the lecture related to the history and characteristics of gun-cotton as an explosive agent more than as a photographic agent, it contained much matter which was interesting and suggestive to photographers. Mr. Solomon placed before members some charming examples of collodio-chloride of silver printing on Obernetter's paper, and distributed samples of the paper amongst the members.

The South London Society was chiefly engaged in one of the most interesting discussions initiated for a long time. The subject was the causes of sensitiveness in collodion, which Mr. Blanchard had been requested to introduce. It is scarcely fair to ask a manufacturer to take the chief part in discussing a subject in which he is commercially interested, and still less so to subject him to a close cross-examination as to the mode of securing excellence in such manufacture; but Mr. Blanchard, with that liberal courtesy which characterises him, gave information on all points on which he was questioned. and materially contributed to make the discussion instructive as well as interesting. At the North London a magic lantern exhibition was held.

The Liverpool Society is setting an example which is worthy of commendation. I refer to the offer of prizes for especial work. I am glad also to see a photographic firm offering to aid them in this project, Messrs. Robinson and Cherrill having offered to produce, during the summer, an instantaneous photograph of sunset at sea, 22 inches by 15 inches, to be given as one of the prizes.

Mr. Peter Lothian's paper on printing on painters' canvas, read at the Edinburgh Society, was a capitally practical paper, and should be read by all interested in that branch of our art.

I am glad to see that a society has been founded at Bristol, and that the names associated with it promise success. Mr. Beattie and Mr. Ennel are two of the most experienced practical photographers, and their aid will be invaluable.

SPIRIT PHOTOGRAPHS.

The "spirit-photograph" imposture is still, it seems, practised in the United States, and the old and clumsy methods of producing the pictures have been abandoned for modes more difficult to detect. The dirty glass with an old impression explanation is met by offers to produce them upon new glass which the investigator may himself obtain, and give, marked, to the photographer, who also offers to manipulate under the eyes of the doubter. It appears that after the prepared plate has been exposed in the camera *en regle*, a transparency of some other portrait is placed at the back of the plate, and occasion taken to give it a momentary exposure. Another image, out of focus and ghostly when developed, is thus secured. The ghosts, however, have, it seems, the general bad taste to be too indistinct in feature to identify, and although representing persons dead for half a century, they appear attired in the mode of to day. The New York correspondent of the *Standard* has an interesting paragraph on the subject which we append.

> A trial of a very remarkable character has been going on for some days in the police-court in this city, in which the knavery and delusion of modern spiritualism have been manifested in an extraordinary light. One, Mumler, a New York photographer, has been driving a very lucrative business for some time past in taking spiritual likenesses. The humbug had been pushed so far that the authorities deemed it worthy of notice, and Mumler was accordingly arrested and charged with obtaining money by trick and fraud. Large numbers of persons have crowded the court-room where trial is in progress. The device of the charlatan consisted in his executing photographs of living sitters, who paid an extra price for the portrait of some lost relative or friend, which should appear plainly recognizable, though in ghostly presence, on the same picture. Many specimens were produced in court. Sorrowing widows, in decorous mourning garb, were taken with the *simulacra* of their lamented husbands rising over them. Mothers, with the apparitions of departed children in their laps, looked at the court from cartes-de-visite of the customary pattern. Mumler's defence is bold enough. He insists upon the supernatural character of his photographs. He asserts that the disembodied spirit takes its place by the side of the sitter of flesh and blood, or hovers in dim angelic outline overhead, as represented by his mysterious art. Very many witnesses were examined whose testimony was favourable to the photographer. It was of no importance that believers in spiritualism, like Judge Edmonds, deposed that they believed in the deception, and found in the phantom features the exact lineaments of their lost ones. But it was startling enough when experts in photography, who had no

faith whatever in spiritualism, swore that they had themselves prepared the plates and adjusted the camera when Mumler took the living likeness, and that, nevertheless, the spectre came out from the negative, vague and yet palpable to vision. The question was, indeed, puzzling how the attenuated shadow of a shade, invisible to mortal eye, should chemically affect the collodion on the plate of glass. But yesterday the delightful mystery was cleared up, to the satisfaction of all but confirmed spiritualists, by the production, on the part of the prosecution, of other photographers, who showed that Mumler's ghosts could be evoked in many ways, by a lens introduced into the camera, by the imposition of a positive plate upon the negative, and the transmission of light through it in the bath, &c. Pictures were exhibited in court in all respects as curious as Mumler's which had been produced by these methods. The decision has not as yet been rendered in the trial, but whether the police commissioner shall succeed in putting a stop to this miserable mode of swindling or not, he deserves the thanks of the community for the exposure he has made of it, and the rational explanation he has given of a trick well calculated to unsettle weak minds.

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THE PHOTOGRAPHIC MARKET.

In a recent letter to our excellent contemporary, the *Philadelphia Photographer*, on the state of photography in Germany, Dr. Vogel gives some interesting details of what he calls the photographic market, or the trade in published photographs. He says:—

"One of our best photographers, Mr. Milster, once made the remark that it was not only the photographer's duty to make pictures, but also to sell them, and that the former was of no use without the latter. There are people who understand the latter to perfection, but who are perfectly ignorant of the former. It is, further, an indisputable fact that, under circumstances, prints which suit the momentary whim of the public will find readier and larger sales than those that comply with every requirement of true art. And so it must happen that the photographer—who, like the artist, has to work for his daily bread—will try everything to please the public taste, and his efforts are crowned with success so long as the fancy of the public sustains him.

"Three years ago children's pictures were in fashion here. You have many of the charming still-life pictures of Loescher and Petsch: children of both sexes playing at ball, teasing each other, bathing, sleeping, or at their toilet, &c. These pictures were made by the thousands. They were very handsome, and it seemed as if the public appetite would never become sated. Soon, however, there appeared imitators, who understood to sell, but not to make. The prices were reduced, the pictures became common, and in two years the business was killed. Loescher and Petsch have lately sold their plates to a wholesale dealer in these articles, whose agents peddle the pictures about the country. Shortly after the children's pictures, representations of flowers made their appearance: roses and forget-me-nots, camelias and acacias, coloured to nature, filled the shop-windows. One might have supposed that these, as auxiliaries to school instructions, would have maintained their place; but far from it, the public soon grew tired of them, and they and their predecessors disappeared.

"At present handsome girls are in vogue. You will, perhaps, say that they have always been in vogue; and really a pretty little face in the modern received style seems more attractive in the show-case of the photographer than the so-called 'studies' of the painter, representing, generally, the wrinkled features of an old man.

"Now, however, the show-case picture has become an article of trade, which is manufactured by the thousands. A photographer here has published a collection under the title of 'Berlin's Celebrated and Famous Ladies;' and you will find, in the same album, princesses of the court, princesses of the theatre, and princesses of the *demi-monde* in sweet harmony side by side.

"Formerly the business of dealing in handsome girls in effigy was managed with some delicacy, but now the name is given with the beauty without the least compunction. Handsome girls are hunted up by photographers, and taken from wherever they can be found: from the theatre, the street, the ball-room, or the factory; and many of them are in such demand that I would not be surprised if they would ask a compensation for having their pictures taken. So far this has only been done in very few exceptional cases. It is strange that these—in many cases indecent—pictures are sent in large quantities to England. A dealer whom I asked for information in this respect told me that young ladies there placed them in their albums. I cannot vouch for the truth of this assertion, and only express the hope that these modern products of our art may be shorter-lived than their predecessors.

"Already a new kind has appeared alongside of these indecent representations. It is stereos representing real still-life scenes, decent in every respect, very charming, and of much artistic value. They represent fortune-tellers playing cards, girls at the spinning-wheel, ladies reading a letter, girls looking out of the window, and many other subjects; they are so elegant, showing so much study in every particular, that the severest art-critic finds nothing to find fault with; and the subjects are so well selected that they must give to any one looking at them general satisfaction. The originators are again Loescher and Petsch, who have already produced so much that is beautiful. I am curious to know how long these pictures will hold their own.

"I have thus given you a picture of our photographic market, and, by discussing at length the theme of 'selling,' almost forgotten the theme of 'making;' but here, also, there is much novelty. Our friend Mr. Wharton Simpson will have advised you of the publication of Albert's process. The publication caused considerable excitement, but the opinion is general that Albert employs in his process a peculiar press arrangement on which success depends. Unfortunately, the introduction of the process has been retarded by the long-continued sickness of Mr. Albert."

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RETOUCHING THE NEGATIVE.

BY DR. VOGEL.

The complaint is very frequent that lead-pencil retouch does not well take hold of the varnished surface of the negative; and Mr. Kurtz, in New York, recommends to rub the varnish with pulverised pumice-stone. A similar recommendation has been made here, and Mr. Grasshoff, our well-known painter and photographer, proposed, for the same purpose, to rub the negative with powder of ossa sepia. This material is very soft, and the powder can be produced by rubbing a piece of it with the finger-nails. The minute scratches which are thus made in the varnish do not interfere in the least with the copying process.

Still another way is to rub the varnish with a tuft of cotton dipped in oil of turpentine; such a surface takes the lead-pencil splendidly, but is apt to repel the india-ink a little, which is used for heavy covering.

With negatives that have to stand long use, it becomes a matter of necessity to protect the retouch as well as the negative itself, and hence it is best to retouch before varnishing. Many of our photographers cover for this purpose the negatives with a solution of gelatine of the strength of 1:25, or a solution of gum arabic of the same proportion. On the dry layer of gum or gelatine it is easy to draw with lead-pencil, or india-ink also can be used, but it requires more practice. The retouched negative is then varnished as usual, and the retouch is as safe from injury as the collodion film itself.

Experience, however, has taught us, unfortunately, that the gelatine film is apt to become spotted in damp weather, and Grasshoff's process is in this respect preferable. He covers his negatives with amber varnish, diluted with from 8 to 10 parts of oil of turpentine. The negatives are put away to dry for about twelve hours, and retouched with lead-pencil; afterwards they are varnished as usual.

The best pencils for retouching are the so-called Siberian, which are made of the splendid graphite of the Briskal lake.—*Philadelphia Photographer*.

OVER-DEVELOPED NEGATIVES.

BY M. CAREY LEA.*

Almost the very last thing that a photographer learns is, the exact point at which to stop development. It is easy to give a criterion to fix the point; the difficulty lies in acting up to it. To get the most perfect combination of brilliancy and softness, one should develop just as long as transparency remains in these denser portions of the image which are to constitute the high lights, so that the very central spot, as it were, of the highest light shall print white. But then this must be a mere point, smaller than a pin's head. Just as soon as this point widens out a little, we get that repulsive chalkiness that leads the careful photographer to consider the negative as worthless.

The difficulty in hitting the right point lies, not merely in the needful experience of what the negative should be, but in judging it under difficulties. The light in the operating room is often insufficient, but even if abundant, its colour is unfavourable, and the negative itself is, to some extent, blocked up by the undissolved iodide and bromide. Besides, the fixing bath varies in strength, and acts differently upon different films, so that at times more, and at others less, reduction of strength occurs in the fixing.

Experience and close observation remove these difficulties to a large extent, but not altogether, so that, after a succession of good results, there will be, from time to time, made a negative in which too much attempt at brilliancy has been made, and which, when viewed after fixing and by ordinary light, gives evidence of something like blockiness in the high lights. In work done at home it will generally be best to try again. But even then the discovery may come too late, and, in views exposed at a distance, we have not this remedy, and in either case must see what can be done with the negative.

I take it that a careful photographer, when such mistakes do occur, will find them out before he varnishes the negative. Not, perhaps, in trying new methods, or in working new sorts of dry plates, in which often the actinic transparency and opacity are very deceptive, but, in any regular work habitually pursued, the exercised eye will always detect this defect before varnishing. If not, then very troublesome operations of darkening parts of the back may need to be tried. Varnish coloured yellow with alcohol, solution of annatto, of dragon's blood, or of gamboge, may be tried, perhaps, with advantage, though the writer has never had much satisfaction out of this sort of operation.

But, in the much more common cases, where the trouble and its extent are perfectly perceived and measured, as soon as the negative is carefully examined by ordinary light, much may be done to help it. I shall glance rapidly at some of the methods that have been used, before speaking of that which has seemed to me to work best.

Cyanide of potassium has been long used for this purpose. It is certainly not a bad agent, except for its poisonous properties, which alone should cause its rejection. But it eats away the half-tone too much, and, whilst the negative is benefited in some respects, it is seriously injured in others.

Acid per-nitrate of mercury will actively dissolve the image, and has been used for reducing negatives. It acts powerfully, and should be applied very carefully. All mercurial solutions are objectionable to this, that they seem to render the film tender.

Iodizing the film has been used by some. When a negative is placed in a weak solution of iodine and water, or to dilute "Lupol's solution" (iodine dissolved in iodide of potassium), it darkens a good deal, and then lightens again. In this condition it is much more transparent than before. The reduction can be increased by dipping into weak cyanide or hyposulphite. But even without this last, the reduction in strength is apt to be too great, and the brilliancy of the print is gone.

Perchloride of iron, recommended first, I believe, by Mr. Hughes, is, to my mind, the most satisfactory agent for this purpose. I do not mean to speak too positively, for I have not often had to use these means; but the experience which I have had has been altogether favourable. The advantage has seemed to be, that a transparency was put into the densest portions before the half-tone was seriously injured, so that by stopping in good time, the negative was got into a really useful condition.

This substance can be had from any druggist, under the name of "muriated tincture of iron," in the form of a buff-coloured solution, which, before using, should be largely diluted with water, perhaps ten-fold. The nicest way to apply it is as a bath. The negative should be well wetted, and then plunged into the bath. Frequent examination is necessary, in order to enable the operator to stop at the exact point, and without overdoing his work. When this point is reached, the film must be well washed off, dried, and varnished, and the solution (filtered if necessary) will answer again and again.

The method is a really serviceable one, and I think that any one who tries it carefully once, will be disposed to resort to it again should occasion occur. As a matter of precaution, the first trial is best made with a negative of no very great value.

HOW TO KEEP A BATH IN GOOD WORKING ORDER FOR THE GREATEST LENGTH OF TIME.

BY GEO. H. FENNEMORE.

Every photographer who values his reputation should have at least two negative solutions: one at rest while the other is being worked. My plan is as follows:—My negative solution is 40 grains to the ounce in strength; I keep it up by adding, every evening after work, sufficient solution, 60 grains strong, to make up for the amount of solution drawn from the bath during the day. The bath is always kept covered to keep out dust, &c., and a strip of clean filtering paper drawn over the surface of the solution in the morning, before work, to remove any scum or other matter that may have formed on the surface of the solution during the night. In this manner your bath may be kept clean, and of sufficient strength, without the trouble of filtering every day. But if your bath is small, I recommend filtering every night after work. My bath holds three gallons of solution, and this I use three or four days, according to the number of plates dipped therein. It is then taken out, and set in the sunlight until the other is ready to come out; the first is then taken in, filtered, and strengthened if necessary, and takes the place of the one taken out. This routine is followed until they show signs of having excess of alcohol. In that state, before putting it in the light, it is evaporated to one-half its bulk, in a porcelain dish, the quantity made up with distilled water, and then set in the sunlight as before. When it shows signs of pinholes, treat it as recommended in a former article. I never wait for a bath to show signs of exhaustion before taking it out, but feed it every day, and for three or four days' work give it as many days' rest: therefore my bath seldom troubles me. In answer to the question as to what developer I consider best, I answer emphatically, iron; and that without any organic addition whatever except acetic acid. I have tried almost everything that has been recommended in the shape of "sugars," gelatine, albumen, candy, &c., and find them very useful for some purposes, such as copying, making transparencies, &c.; but for portrait negatives I think nothing equals plain iron and acetic acid.

The strength of the developer should always be determined by the results you wish to get.

My developer varies from 15 grains to 60 grains strong, but my average developer is 30 grains; this is used for subjects in general. But there are many subjects that require different treatment; for instance, a person with fair complexion, light hair, eyebrows, &c., should have a weak developer, because that increases contrast; while, on the contrary, a fair complexion, with black eyes and hair, should have a strong developer, because that reduces contrast. Experience alone can determine the kind of developer suitable for each individual, and every photographer should aim so to regulate his developer that it will give him harmonious, at the same time the most brilliant results.

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* *Philadelphia Photographer.*

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MANY MOTES FROM MANY MINDS.

BY EDWARD L. WILSON.*

Be exact in making your solutions, and never use unclean vessels to put them in.

Mind what you are doing, carefully; then if you fail you will the better understand why.

If you meet failure after success, you may be assured that it is because you have done differently from what you did when you succeeded.

If you can, let your dark closet be roomy, and be sure to have nothing in it not actually needed there. No admittance for dust or trash.

Ventilate your dark closet, and save your health. Don't be afraid to have it light enough, so no white or actinic light is admitted.

Have patience. If you fail, endeavour to understand why you fail, and try again. Light your sitter skilfully; pose him tastefully; focus sharply; expose with judgment; develop carefully, and good work will reward you.

If you dip your plate before fully coated, there will be a line across it; pouring it in before the collodion is set causes lines; and if you do not immerse it soon enough, the part of the plate that has become too dry will be insensitive, and show a transparent mark.

The plate should remain in the bath at least twice as long in winter as in summer.

Clean your dark slides frequently, and keep them well greased with lard. Handle the glass very carefully when it is in the dark slide.

If the image starts out at once when the developer is applied, it has been over-exposed. If the image appears slowly, and the deep shades reluctantly, the plate is under-exposed. First the high lights, then the light shades, and finally the deep shades, is the proper way.

Remember, good negatives are the keystone of the grand arch of photography. Do not expect to get good prints and rich tones unless your negatives are good and rich, for it is impossible.

In printing portraits, let the head be your guide; get out all the half-tones clearly and nicely, and the picture will be good. Print and tone deep for a purple-black tone; tone less for purple brown, and still less if you wish a rich chestnut brown.

The majority of prints are cold, grey, weak, and flat, because they are over-toned. In winter, your solution will tone more rapidly if you warm it. The best way to warm it is to set the vessel holding your solution in another vessel of hot water. Do not tone in too much light. A weak shaded white (not yellow) light is best. If your toning solution is fresh and strong, be careful not to get more prints in at a time than you can manage. Keep the prints moving, and guard against their overlapping each other, and the formation of air-bubbles between them. If you do not, they will tone unequally. Prints always dry up less brilliant and rich than they look to be in the solution. By looking through them you can tell what colour to get.

Some persons forget to put salt in the intermediate water in which the prints are put between toning and fixing; the consequence is, they continue to tone, and become overtoned and spoiled. Salt arrests the toning. Do not forget this.

Never use a fixing solution twice, and stir your prints frequently while they are in it, and use warm water in cold weather, for hypo and cold water cause air-bubbles forming between the prints in the hypo cause yellow spots. Wash your prints well in several changes of water after fixing.

Good prints are worth all the effort you can put forth to secure them. If you think photography is a mere mechanical business, and success more dependent upon good luck than careful manipulation, get out of it. You are in the wrong business.

If trouble comes, keep cool, and quietly try to find it out and remove it. Care saves many a trial and much tribulation. Do not blame your chemicals when you are yourself to blame.

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* "Photographic Mosaics."

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PHOTOGRAPHIC PIRACY.

THE CHARGE OF CONSPIRACY.

The charge against John Coleman, John Lawrence, and William Hooper for unlawfully conspiring together to procure pirated copies of certain paintings of which Henry Graves had purchased the copyright, with intent to defraud, was heard at the Central Criminal Court on Tuesday week.

The defendant Coleman pleaded guilty.

Mr. Giffard, Q.C., was specially retained with Mr. Montagu Williams to conduct the prosecution. Mr. Besley appeared for Hooper and Mr. Underwood appeared for Lawrence.

The prosecutor in this case was Mr. Graves, and the object of the prosecution was to put down a system of pirating, by means of photography, engravings from valuable and popular paintings which he had purchased, and of which he had obtained the copyright. It was stated that Mr. Graves had expended in the course of his business nearly a quarter of a million of money in the purchase of works of art of this description, and that the consequence of the proceedings of which he now complained was to damage his business most seriously, the engravings for which he charged five guineas being sold by those who obtained them by means of the photographic process for one or two shillings. It appeared that the defendant Lawrence occupied a room in a house in Gibson Street, and that Coleman was in frequent communication with him, and used to go to his residence and bring away photographs in a black bag, and when the place was searched no fewer than 400 pirated photographs were discovered. In the course of the case it was admitted that the evidence was not sufficient to connect the defendant Hooper with the transaction.

Mr. Underwood, at the close of the case for the prosecution, submitted that the facts proved in evidence would not support a charge of conspiracy, and that the prosecutor ought to have availed himself of the powers given by the act of parliament to proceed summarily before a magistrate.

The Recorder said that although the act of parliament gave the power to proceed summarily, that did not preclude the prosecutor from preferring an indictment for conspiracy if he thought proper to do so.

The learned counsel then addressed the jury for the defendant Lawrence, and contended that the prosecutor, Mr. Graves, had not made out his title to the copyright of the works in question, and he called their attention to the clauses of the act of parliament, and argued that the facts would not support so serious a charge as that of conspiracy, and that the proper course would have been to summon the parties before a magistrate.

Some witnesses were called for the defence, among whom were Mr. Wilson, Mr. Frith, Mr. O'Neil, and Mr. Calderon, the eminent artists, by whom some of the original pictures were painted, for the purpose, apparently, of showing that they had not disposed of their right of copyright in these pictures. To a certain extent, however, their evidence tended to confirm the evidence of Mr. Graves that he was entitled to the copyright of these pictures.

The Recorder, in summing up, said he was clearly of opinion that Mr. Graves had made out a prima facie title to the copyright in these pictures, and the only question was whether the defendant Lawrence had knowingly entered into a conspiracy with the man Coleman, who had pleaded guilty, to contravene the act of parliament under which the indictment was preferred.

The jury, after a short deliberation, found the prisoner Lawrence guilty, and acquitted Hooper.

Evidence was then given that the defendant Lawrence was fined £40 summarily before the magistrate at Marlborough Street, for a similar offence.

Sentence was deferred upon Lawrence, but Coleman was discharged upon his own recognizance.

Subsequently, Lawrence was called up for judgment, and sentenced to twelve months' hard labour.

Alleged Incorrect Registration.

At the sittings in Banco before the Lord Chief Justice and Justices Lush and Hannen, May 8, Mr. Underwood moved, on behalf of G. B. Walker, now under sentence for having pirated certain photographs, the property of Mr. Graves, the eminent publisher, for a rule calling upon Mr. Graves to show cause why certain entries of copyright in the books at Stationer's Hall should not be expunged, on the ground that Mr. Graves had no legal right or property in them. The Copyright Act states that any person who believed himself to be aggrieved should have power to dispute the right of the person registered; and the question was whether Walker, who was now confined in one of the cells of the Surrey prison under sentence for piracy, was a person aggrieved within the meaning of the statue.

The Lord Chief Justice said it had been held—and very properly so—that a person aggrieved under this Act was one whose title conflicted with the registered owner. The applicant was a pirate, and had no interest in the work. It might be that the registration was imperfect, but it was quite clear that Walker had no interest in it.

Mr. Underwood said Mr. Graves employed a man to photograph the engravings of the paintings of the old masters, and then registered them, and claimed to have a copyright in them, when it was clear he could not comply with the requirements of the Copyright Act. He could have no assignment from the author.

Mr. Justice Lush.—Your client is not aggrieved by that.

Mr. Underwood.—We are put in prison.

Mr. Justice Lush.—And properly so (laughter).

The Lord Chief Justice said it was only at the instance of the party aggrieved that this Court could be put in motion. That had been properly held to be a person who had a conflicting title, and not a person who speculated on the possibility of showing that this registration was imperfect.

Rule refused.

Correspondence.

TONING COLLODIO-CHLORIDE PRINTS.

Sir,—In your columns of a fortnight or three weeks ago I found a formula for toning Obernetter's paper prints. It consisted of carb. soda and chloride of gold, &c. I tried it with fair success, but found that the following (an old friend when I used albuminized paper) gave better results :—

Carb. soda...	1½ grains
Chlor. lime	1½ ,,
Pure chlor. gold	1½ ,,
Hot water	10 oz.

This, used when hot, gives a beautiful purple-black tone, which is retained after fixing, and the bath may be used till the gold is exhausted. I have found with this bath, however—as with all others I have tried—that a certain amount of over-printing is requisite. The print loses this in the toning bath, and not in fixing. A composition of equal parts of pure white wax and oil of lavender (mixed when the former is melting) applied to the surface of the finished print, and rubbed well in with cotton wool, causes an adhesion to the paper of the film which is well-nigh perfect.

I find the paper everything I can desire. The finest details of the negative put in an appearance which escaped the grasp of the albuminized surface. For an amateur I believe it removes a mountain from the path to success.—I am, sir, &c., W. de W. Abney, Lieut., R.E.

NEW AND OLD IRON DEVELOPERS.

Sir,—Adopting, as I do, your own and Mr. Carey Lea's opinions (1), that persulphate of iron in the developer acts as a restrainer, and (2) that, *cæteris paribus*, the higher the proportion of restrainer in a developer the greater will b the contrast in the negative, nevertheless I do not think that the use of an old iron developer should be entirely condemned, as Mr. Lea has condemned it in the number of the *Philadelphia Photographer* from which you quoted in the News of April 23. He there says :—"Those who cannot manage their baths, and tend to foggy pictures, will always like old developers, because these enhance the brightness of the picture; those who keep their baths in first-rate order will like a nearly new developer, on account of the better distribution of silver which it gives, and the greater harmony of effect."

A few years ago there was a great deal of excitement about the use of gelatine in the developer, the effect of which was said to be that, by a single application of the iron solution, the negative might be brought up to any required density without subsequent strengthening, and a much more harmonious picture thereby secured, than could be done if pyro and silver were afterwards employed. For my own part, I never used gelatine, and for a very simple reason: I could almost always obtain the necessary strength, even for carbon printing, by a single application of an ordinary iron developer, of a strength varying from 15 to 50 grains of iron per ounce; and at the same time the negatives were so soft and so full of half-tone, that when I submitted them to a well-known landscape photographer, mentioning that they were produced by a single application of the developer, he, naturally supposing that I had used gelatine, wrote at once to express his pleasure at seeing such fine results from his favourite process.

From that time to the beginning of this year I never was able to ascertain why I had obtained the right density so easily and so quickly; but when I saw your leading article upon an extract from a contemporary, it at once occurred to me that I was at that time in the habit of keeping my developer a considerable time before I used it. In the same or the following number of the News to that which contained your article, was a letter from a photographer explaining a plan by which he obtained, by a single development, portraits of sufficient density for printing; and it was evident that in his case, as in mine, success depended upon the presence of persulphate of iron in the solution. With every respect, therefore, for Mr. Carey Lea's high authority, I venture to submit that at least as soft, and equally brilliant pictures may be obtained by the proper use of an old as of a new developer.

"But," I shall be asked, "if persulphate of iron gives a more brilliant, will it not also give a harder picture? and how is the softness to be obtained?" The answer appears to me very simple. It is found that, *cæteris paribus*, a harder picture will be the result; but the persulphate, acting as a restrainer, enables us to expose the plate for a longer time than would be practicable with a new developer, and thus we give the details in the shadows of the landscape time to impress themselves upon the sensitive film sufficiently to enable them to come out in proper gradation on the negative, the hardening property of the restrainer being thus counterbalanced by the softening effect of the longer exposure, and we gain the great advantage of obtaining the necessary strength without a re-development, which must always, to some extent, bury detail and produce hardness.

I had hoped to make some comparative experiments, to assure myself of the correctness of my views, before writing to you, but as I am not likely to have an opportunity of doing so at present, and as your readers can so easily make them for themselves, it seems better that I should at once, while the question is fresh in their minds, state the grounds for my opinion that in some cases an old developer is better than a new one, even when all the chemicals used are in the best possible condition. Of course, for instantaneous pictures, and in all cases where it is essential to give the shortest possible exposure, a new developer must be used.—I am, sir, your obedient servant, Amateur.

Switzerland, May 4th, 1869.

STABILITY OF GUM NEGATIVES.

Dear Sir,—The question raised by "Cymbo," in the News of last week, as to the permanency of gum plates, has been satisfactorily answered (at least, theoretically) in your leading article, which ought to dispel any misgivings upon the subject from the minds of timid photographers. This opinion I can confirm by the experience of six years, for in 1863 and the two following years I took a great many negatives by a dry process, the preservative of which consisted principally of gum.

After reading your article, I thought it desirable to look over the negatives taken by this process, and see if they showed any symptoms of decay. Accordingly, I overhauled my stock, and I am glad to say, that although the negatives have been stored in a common deal plate-box, and kept in a damp room, which has not had a fire in it for twelve months, they were all as perfect as when developed, nor could I find a trace of injury arising from the giving way of the film.

I send you herewith a few prints from negatives taken in 1863-4-5, which show how suitable the gum process is for most kinds of subjects, and I am convinced the more it is worked the more it will be liked.—I am, yours truly,

Copt Hewick, nr. Ripon, May 3rd. Jos. S. Hurst.

[The testimony and results of a skilful and experienced dry-plate worker like Mr. Hurst (formerly of Mirfield) are very satisfactory, and will help to set at rest any doubt on this subject.—Ed.]

WET LANDSCAPE PHOTOGRAPHY WITHOUT A TENT.

My Dear Sir,—I have read Mr. Whiting's description of his photo-camera lucida, and, without wishing to detract from the merit of his plate-protector, which he considers "worth its weight in gold," I cannot see that it protects the plate from the injurious action of light better than mine. Indeed, there is, it appears to me, a short period of time previous to placing the blotting-plug on the lower end when a small amount of light must enter. This is not the case in mine. It is perfectly immaterial to me whether the public take up mine or not; but as Mr. Whiting has protected his, I trust it will not be said, some day, that to make my camera might be considered an infringement of his patent, as was the case with the French camera, though it was made years after mine was described in the News.

When I first used my apparatus, some twelve years ago, I found that development was more even by dipping than by pouring on to the plate, and I never found the iron developer lose its activity, unless when the nitrate bath became acid. I also found that the light had no prejudicial effect after development had commenced with an iron developer, and, therefore, I never draw up the plate into the protector from the developing bath, but loosen the clip, and leave the plate in the bath, and wash it in open daylight.—I remain, my dear sir, yours very truly, Thomas Barrett.

May, 8th, 1869.

[There cannot be a doubt as to Mr. Barrett's priority in this matter, as the description of his manipulating camera was published in the Photographic News in October, 1858. The detailed and illustrated description of a very complete and perfect piece of apparatus will be found in the numbers for the 22nd and 29th of the month named, by those desirous of making further acquaintance with the subject. Mr. Barrett's testimony on the subject of developing in a bath is valuable, as based on careful experience.—Ed.]

PHOTO-RELIEF PRINTING PROCESS.

Paris, 2nd Mai, 1869, 28, *Rue de la Trevise.*

Sir,—When any process is protected by patent from employment by the public, it rests with any one to discuss its details in a *boná fide* manner, and to consider whether the same are really wholly or partly new. Your journal possesses the very high merit of impartiality, and is, I believe, open to any loyal discussion of facts without reference to personal matters. As a simple amateur, although a curious and attentive one, without any material interest in the question one way or the other, I have deliberated whether the following lines do not indicate the salient points of the Woodbury process; they are a correct extract from Becquerel's work on the "Elements of Electro-chemistry" (p. 408), published by Firmin Didot in Paris in 1843.

"M. Kobbell, of Munich, has applied the process of electrotyping to a description of engraving of which we must make mention. His process consists of making a design, and painting the same by means of a brush and a transparent colour upon a plate of silver or copper, of any object which he wishes to reproduce as an engraving. The shadows are produced by very thick layers of colour, the half-tones by layers of decreased thickness, and the high lights by the absence of the colouring matter altogether. Upon this design is formed a covering of copper sufficiently thick to resist pressure, and in this manner is produced a plate in which the deepest tints are represented in intaglio. In filling the hollows with a transparent colour, which is disposed upon paper by means of a press, a proof is obtained identical with the original."*

Mr. Woodbury employs bichromated gelatine and pressure to produce the intaglio, but I do not know whether he claims these two mediums. On what basis, however, does his patent rest? Or, in other words—the use of bichromated gelatine being allowable—what prevents any one from making use of the Woodbury process?

I am not the only one, I believe, to whom this question has occurred, and I do not think, therefore, that Mr. Woodbury or the proprietors of his patent will take it much to heart if the point is raised in a journal so widely circulated and esteemed as the Photographic News.—Agree, monsieur, to receive my most sincere salutations, Rolloy fils.

[The passage quoted certainly seems to suggest a similar idea to that embodied in Mr. Woodbury's process, but it is scarcely sufficiently definite to afford a clear idea of how results are to be produced; and the fact that the suggestion had been in print for nearly a quarter of a century without being utilized bears out this notion. But, in any case, we presume that Mr. Woodbury's patent would still remain safe, being based on the utilization of an intaglio plate produced by photography, for printing in transparent colour, and so obtaining a fac-simile of the photograph. That thing had not been done before, and that thing it is, we presume, which is protected in Mr. Woodbury's patent.—Ed.]

IRON DEVELOPER.

Sir,—Among the many valuable papers published in your invaluable News, that by M. Carey Lea, on Developers and Development, in your last number, is not one of the least important, and should be known by all operators. I have used a developer similar to his first formula for the last five years, and have never found it fail. My formula is this—

Sulphate iron...	1 ounce
Glacial acetic...	2 ounces
Water...	24 fluid ounces

This is for summer work; in winter I simply add another half-ounce of iron, and very seldom use alcohol ; but when I do, it is as Mr. Lea states, when the bath is old, or has been much worked and frequently replenished, and then I find 1 ounce quite sufficient. I will not venture to say that this developer will do equally well with any collodion, as I have only used it with Huggon's, and Mawson and Swan's, principally the latter, and the latter only during the last three years.

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* For the purpose of exactness we add the text of the extract in the original :—

"M. Kobbell, de Munich, a appliqué la galvanoplastie à un genre de gravure dont nous devons faire mention. Son procédé consiste à dessiner et à laver au pinceau avec une couleur transparente, sur une plaque d'argent ou de cuivre, les objets que l'on veut reproduire en taille-douce. Les vigueurs sont donneés par les plus grandes épaisseurs de couleur, les demi-teintes par les épaisseurs moindres, et les lumières par l'absence de toute couleur. L'on dépose sur ce dessin une couche de cuivre assez épaisse pour résister à la pression ; on a ainsi en creux les teintes les plus épaisses. En remplissant ensuite ces creux d'une couleur transparente, que l'on dépose sur le papier au moyen d'une presse, on obtient ainsi une épreuve identique avec l'original."

I do not always obtain the amount of density I desire by the first development, but after fixing I redevelop with a very small quantity of the following solution (the plate being first washed and entirely free of cyanide) :—

Pyrogallic acid	... ...	½ drachm
Distilled water	... ...	10 fluid ounces
Glacial acetic acid	... ...	2 „ drachms

The quantity required for redeveloping a half-plate is about half an ounce (fluid), with 5 or 6 drops of the nitrate bath added previous to pouring it on the plate. This should produce the required density in from ten to thirty seconds.

I may mention that I take an old worked up nitrate bath, or a portion of one, and reduce it to a 15-grain solution, and use it with the pyro. Another method I follow, especially in winter, or very dull weather, and when I can't force it, is after the first development, wash the plate well, pour on it a few drops of the 15-grain nitrate solution, let it flow all over the plate, and then apply the iron as at first. In a bad light I get a good negative by this method when all others fail. This, I believe, is Mr. Wilson's plan ; at least, it is a modification of his.

As a very strong feeling seems to have got abroad against fixing with cyanide, allow me to state my belief that it has nothing to do with the cracking of films ; the blame lies more with the kind of varnish used, than in the fixing. About four years ago I had a gallon of varnish from a London house ; it was very low in price, but very costly I found it to be in the end, as nearly the whole of the negatives I coated with it were destroyed by the films cracking ; at last my suspicion was aroused. I gave it up, used the American and sometimes the French varnish, and I have never lost a negative since, and I always fix with cyanide.—Yours respectfully, Jas. Davidson.

Newcastle-on-Tyne, May 3rd, 1869.

CARBON PRINTING AT NEWCASTLE.

Sir,—Permit me to mention, in reference to a correspondent's visit to Swan's Carbon Printing Establishment at Newcastle, published in the last number of your Journal, that the establishment in question belongs exclusively to the Autotype Printing and Publishing Company, of London, who took it off Mr. Swan's hands many months ago.—I am, sir, faithfully yours,

H. Murray, F.S.A., Assistant Secretary.

5, *Haymarket, London, S.W., May 12th, 1869.*

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 2nd ult., M. Peligot in the chair.

The President announced the death of the Marquis of Laborde, one of the earliest disciples of photography, and likewise an original promoter of the Society.

M. Davanne presented a copy of his work, *Annuaire Photographique pour 1869*, which has now reached its fifth year.

M. Leopoldo Castrol, of Xerez de la Frontera, forwarded a collection of positive prints covered with various transparent colours, and accompanied by the following note :—"I employ the wet collodion process, and obtain my negatives in the ordinary manner. When dry and varnished I print a test proof in the ordinary manner, and if the lights are somewhat too glaring, correct the same by retouching. My paper is prepared in advance, and the prints produced by means of nitrate of silver. After exposure in the frames the prints are washed in water and then slightly fixed, by which they obtain a sepia tone. I wash and dry them immediately, and take them into a dark room, where, by the aid of yellow light, I prepare carefully with a brush all those portions of each print which are required of the same colour as the original, viz., the flesh, beard, and hair of the models, and sometimes the accessories. I again dry as soon as possible, in order to apply the reagents corresponding to each of the prepared portions. The effect is instantaneous ; and as the results are produced I pass the prints into a special bath, and afterwards in water where they remain for the space of one hour. They are then immersed in a gold toning bath, which darkens such parts where it is necessary, and glazes and softens the other portions, so as to render them more harmonious. Finally, I fix, and let the prints remain in a large bath containing a little glycerine."

The Society examined M. Castrol's prints, and thanked him for his communication.

MM. Meyer and Nicolaysen, of Bergen, Norway, in forwarding a collection of prints for the forthcoming exhibition, addressed a few remarks on the employment of black velvet curtains in studios as a means of suppressing diffused light.

M. Gaumé forwarded two transparent proofs upon paper capable of being used as positives or negatives for any process ; the mode of production was not described, but the specimens were sent in to compete for the special medal.

M. Ferrier presented, in the name of M. Marie, some photo-lithographs—or rather, lithographs—produced by the aid of photography.

M. Pinel Peschardière exhibited some maps taken by a photo-lithographic process, in which the photographic proof is laid down upon the stone in ordinary printing ink, so that no difficulty is experienced in subsequently applying the roller to the stone.

M. Despaquis communicated some details of M. Braquehais's process, by which means carbon prints are obtained upon a film of gelatine coagulated by alum.

M. Rousselon, in the name of MM. Goupil and Co., presented a collection of prints produced by the Woodbury process, and detailed the various manipulations by which they had been produced.

M. Gobert reported upon the employment of some wooden dishes coated with varnish, which had been proposed for use by photographers by M. [illegible] Talbot. M. Gobert stated that he kept one of these utensils filled with liquids, such as hyposulphite, gallic acid, sulphate of iron, and other solutions, and that it had not, during that time, sustained any injury. Ammoniacal liquids acted upon the varnish, however, and he had not deemed it expedient to employ the dish for silver solutions. M. Gobert considered the utensils suitable for such operations as toning, fixing, washing, &c.

M. Davanne communicated to the Society the results of some investigations which he had just closed with reference to the solubility of alkaline bichromates, and the densities of solutions furnished by these salts. He demonstrated experimentally a simple method which, through the medium of heat, distinguished at once between the bichromate of potash and the corresponding salt of ammonia.

M. de Schwartz raised a question as to the desirability of collecting statistics in reference to photographic industry, and placed the sum of a hundred francs at the disposal of the Society towards defraying any expenses which might be incurred.

The proceedings then terminated.

Photographic Society of London.

The usual monthly meeting was held in the Architectural Gallery, Conduit Street, on the evening of the 11th, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed, and the following gentlemen were duly elected members of the Society :—Messrs. A. J. Melhuish, W. Cobb, C. G. Davenport, Alfred Hughes, W. Wainwright, F. Fache, and Captain Pocklington.

The Chairman explained that Mr. Johnson was prevented by indisposition from giving his demonstration of carbon printing on that occasion, but would do so at the next meeting. In the meantime the Secretary would read Mr. Johnson's paper which had been forwarded.

After the paper had been read, and some conversation, Mr. **Griggs** exhibited a fine photo-engraving by Garnier, Holbein's "Dance of Death," in facsimile, photo-lithographed by Mr. A. Brothers, and a photo-lithograph, of which he distributed copies, produced by himself from an old print after Rubens, the negative by Dr. Diamond.

The **Chairman** remarked that he had often regretted that ladies so seldom attended the meetings of the Society. He was glad to see two present at that meeting, and one of them, Mrs. Cameron, wished to say a few words to the members.

Mrs. **Cameron** wished to obtain the opinion of members as to the cause of cracking in the film of some of her negatives. She produced a large negative of Sir J. Herschel, taken in April, 1867, which was now, she stated, together with many others, covered with honeycomb-like cracks. The collodion film appeared to be cracked underneath the varnish, the latter being intact. About forty of her negatives had suffered in the same way during the last two years, the injury taking place at all seasons of the year. She formerly had used Perry's collodion, but since he had made it thinner, to suit cards, she had used chiefly that of Mr. Thomas, and some by Mr. Brading, of Newport.

A long conversation and examination of the negatives followed, in the course of which it was pointed out that the cracks were through varnish as well as collodion, and that they often resulted from the use of Sœhnee varnish.

Mr. **Thomas** said that as his name had been mentioned, he, perhaps, ought to say a few words. Cracks in the collodion film had, unfortunately, been occasionally seen ever since the introduction of the collodion process, no matter what collodion or what varnish had been used, without the fault being due to either, but rather to the incompatibility of the same two samples when used in conjunction. Changes of temperature and moisture would also, doubtless, have their effect. A photographer of considerable eminence and large experience had recently told him that he found that negatives wrapped in paper never cracked, whilst similar negatives put away in plate-boxes did so. He believed that where the collodion was made thick, with a view to secure dense negatives, the tendency to crack was increased, the thickness of the film affecting, of course, its contractibility; and this might sometimes account for some negatives produced with the same materials and apparently under the same circumstances cracking, whilst others remained perfect. He believed that Mr. Perry's collodion, to which Mrs. Cameron had referred, was a thin collodion.

Mrs. **Cameron** interposed to say that perhaps the fact that she had often used the plates over and over again might have conduced to the disaster.

Mr. **Thomas** said undoubtedly dirty or damp plates would conduce to such a result. He feared that under some circumstances all varnishes were liable to the same injury. When Dr. Diamond introduced amber varnish, he (Mr. Thomas) believed that it was quite free from liability to such a defect; but he had since found some films crack which were varnished with it. He thought that difference in contractibility between the two films was the cause of cracking, and it would be difficult to effectually guard against it.

The **Chairman** called attention to the fact that Mrs. Cameron had said that the films had cracked at all times of the year, and under all circumstances of temperature and humidity, and all the films had cracked, he understood, and not one now and then.

Mrs. **Cameron** said she had taken about 600 negatives during the last six years, and during the last two years about 45 of these had cracked.

Mr. **Blanchard** said that as Mrs. Cameron resided at Freshwater her residence would be subjected, during certain winds, to breezes bringing much saline matter, and consequent moisture, and it was to this, he had no doubt, the cracks were due. The best mode of preventing the effect of the damp was, he believed, to pack the negatives up in paper instead of keeping them in plate-boxes. At one time, when he kept his negatives in plate-boxes, he had a number of them cracked, but had not seen anything of the kind since he had kept the negatives wrapped in paper. Referring to Mrs. Cameron's negatives, the appearance at first justified her impression that it was the collodion only, and not the varnish also, which was cracked. This he would demonstrate by rubbing the surface with a little soot. [Mr. Blanchard did so, and the soot at once filled up the cracks, and made the negative capable of printing without showing the cracks.]

After Mrs. **Cameron** had expressed thanks for this hint,

Mr. **Hooper** suggested that one of the causes of cracking was moisture on the plate from the breath coming near and condensing on large plates during the operation of coating with collodion. He also confirmed the statements as to the superiority of the plan of keeping negatives wrapped in paper.

Mr. **Dallmeyer** pointed out that some kinds of glass suffered from a change technically called "sweating;" a certain exudation appeared on the surface, caused by excess of alkali in the manufacture. It was impossible to wipe such glass clean, and the presence of this exudation, causing dampness, might be the probable cause of cracking. Glass in this condition might be cleaned by the application of dilute sulphuric acid, 1 part of sulphuric acid to t parts of water.

Mr **Hart** confirmed the idea that the cracking was due to moisture, and mentioned that, owing to the bursting of a steam pipe in his establishment, the walls had become damp on one occasion. The films of the negatives in a cupboard in the room all rose in ridges, finally causing cracks.

Mr. **Howard** said his experience was confirmatory. He attached considerable importance to warming the plate thoroughly before varnishing, so as to drive off all moisture, and after varnishing, so as to drive off all trace of alcohol.

Mr. **Hart** said the latter plan was obviously an important caution, inasmuch as any trace of alcohol left, having a great affinity for water, would absorb moisture from the atmosphere.

Mr. F. **Eliot** confirmed the statements as to the superiority of paper packing over plate boxes, and suggested that the paper should be made waterproof with gutta-percha, boiled linseed oil, or similar substances. He cautioned members against using old newspaper for such packing as being unsafe. He found brown paper best.

After a few words from the Chairman, and a vote of thanks,

Capt. **Lyon** read a brief account of photographic experiences in India, and exhibited the finest collection of Indian photographs which have ever been seen in this country.

The **Chairman**, in making some comments on the subject, incidentally referred to a great balloon, now exhibiting in Ashburnham Park, and invited photographers interested in photographing from a height of 1,600 feet, in a balloon kept stationary, to make a trial. He would assure them facilities.

Messrs. **Schmerl** and **Ellis** exhibited some very fine examples of photographic enamels by Herr Greiner, of Apulda.

The **Chairman** called attention to the prize prints of the Amateur Photographic Association. He said that prizes of eighty-five guineas value had been awarded to them. The prizes could be seen by any member interested in the matter by calling at 12, York Place, Portman Square.

The **Chairman** said that the council had that night appointed a committee to watch, and, if necessary, take action upon, a Bill, now in the House of Lords, relating to artistic copyright. He understood that, in that Bill, at present, there were provisions which might be very injurious to photographers. This committee would desire to see that proper provision were made alike for protecting the photographer and the public in relation to the copyright in portrait negatives. He would be glad if members would communicate suggestions on the subject to Dr. Mann, 15, Buckingham Street, Adelphi.

The proceedings then terminated.

North London Photographic Association.

The usual monthly meeting of this Society was held in Myddelton Hall, on the evening of Wednesday, the 5th inst., Mr. **Goslett** in the chair.

The minutes of a former meeting were read and confirmed.

In the absence of a paper, the meeting resolved itself into a conversazione, Mr. Benson's Photographers' Register, and some Obernetter prints, exhibited by Mr. Taylor, forming the chief subjects of attention; after which the proceedings terminated.

Edinburgh Photographic Society.

The twelfth meeting of the session was held in the Hall, 5, St. Andrew Square, on Wednesday evening, May 5th. Mr. **James Ross**, George Street, occupied the chair.

After the usual routine business had been got through, a very interesting paper on "Printing Photographs on Ivory by Various Methods" was read by Mr. William M'Craw, in which he explained three different modes of accomplishing the object referred to. In the course of the remarks which followed, much regret was expressed at the almost total desuetude of the beautiful art of ivory miniature painting, and hopes were expressed that the methods Mr. M'Craw had explained might be of great service in wedding the truth of photography to the beauty of miniature painting. At the close of an interesting discussion, a hearty vote of thanks was awarded to Mr. M'Craw.

Various donations of prints to the Society's album were made, and examples of printing on new kinds of prepared papers were exhibited.—*Scotsman.*

Amateur Photographic Association.

A council meeting of the above Society was held Tuesday, the 7th inst., at 12, York Place, Portman Square, James Glaisher, Esq., F.R.S., in the chair.

The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected: Geo. Dundas, Esq.; B. Greene, Esq.; J. A. Prout, Esq , B.A.; G. W. D. Green, Esq.; Capt. H. E. White; F. S. Teesdale, Esq.; A. R. Hunt, Esq.; C. Harrison, Esq.; Miss Cumby.

The Secretary then laid before the Council the following prizes, amounting in value to about eighty pounds:—A large silver goblet—J. W. Richardson, Esq; a silver goblet—Lieut. Senior; a ditto ditto—D. Pudumgee, Esq; a ditto ditto—W. Baily, Esq; a ditto ditto—F. Beasley, Esq; a silver mounted claret jug—Capt. Bankart; a ditto ditto—Lieut. Senior; a ditto ditto—W. D. Howard, Esq.; a ditto ditto—A. Booty, E[illegible]; a ditto ditto—E. R. Hall, Esq.; a ditto ditto—F. E. Currey, Esq.; a large album, elegantly bound in morocco, with silver name plate—Major Gresley; a ditto ditto—J. G. Hyde,. Esq.; a ditto ditto—E. Milsom, Esq.; a ditto ditto—J. H Ritchie, Esq.; an album elegantly bound in morocco—J. H. Ravenshaw, Esq.; a ditto ditto—F. S. Schwabe, Esq.; a ditto ditto—Rev. J. Freke; a ditto ditto—R. Murray, Esq.; a revolving stereoscope—J. V. K. Moss, Esq.

The Council expressed great satisfaction at the prizes, and on the motion of Dr. Arthur Farre it was decided that they should be kept on view throughout the following week.

The Secretary reported to the meeting that he had received a reply from the Earl of Rosse, stating that his Lordship would "feel much pleasure in becoming a member of the Council."

The proceedings then terminated.

◆

Talk in the Studio.

Obituary.—Another of the veterans of photography has passed away. Sir Thomas Maryon Wilson died on the 5th instant. He was an early calotypist, and one of Dr. Diamond's earliest pupils in the collodion process. He was one of the founders of the Photographic Society, and occupied the position of a vice-president. He continued a member until his death, and contributed to the last exhibition of the Society.

The Newcastle Carbon Printing Establishment.—It should be stated that the Carbon Printing Establishment in Newcastle-on-Tyne, which a contributor described in our last as that of Mr. Swan, is now, in reality, that of the Autotype Company, to whom all interest in the Patent and its working belongs.

Albumeno-chloride of Silver for Printing on Painter's Canvas, etc.—A correspondent sends the following as a good workable formula for this process:—"Take 1 drachm of fresh white of egg, 1 ounce of distilled water, and 60 grains of chloride of ammonium or other chlorides. Put this solution in a 2-ounce bottle, shake well, and pour out into a mortar, and get rid of air-bubbles. Take nitrate of silver 60 grains in 1 ounce of distilled water; when dissolved, pour this sensitive solution into the mortar containing the above salting solution, carefully, before it ceases to precipitate; settle; decant the water, and leave the albumeno-chloride of silver in the mortar half dry or wet. Drop 2 drops of 80-grain silver solution into this, and grind with a pestle until the mass assumes the condition of cream. Apply to the surface of the canvas by the method observed in house painting. When the whole surface is coated, cross and recross the brush streaks until an even coating is secured, when the albumeno-chloride of silver should be laid off as smoothly as possible, and the brush-marks finally removed with a grainer's badger or softening brush. Then dry before the fire. Print under a negative in the usual way. Wash in plain water. Tone in gold-toning, and fix in a hypo solution as usual."

Velocipedes and Photography.—The New York correspondent of the *Philadelphia Photographer*, referring to the velocipede mania, says:—"I cannot permit this letter to leave my hands without entering a protest against the now popular mania of velocipede riding which muscular sport—one that requires more legs than brains—I regret to announce, has captivated one of our shining lights—no less a luminary than the veritable author of a series of serio-comic letters well known to all, a few years since, as the 'Adventures and Experience of Daddy Long Legs.' Your correspondent protested when he first beheld said gentleman astride of one of 'them things.' It was lost, however, as the said 'two-wheeler' declared it was the very thing for a photographer to get about upon; he intended having a rack behind to carry his traps, and other fine theories which may do to dream about, but will never come into use photographically."

Reproducing Negatives by Collodio-Chloride of Silver.—Dr. Vogel says, in the *Philadelphia Photographer*: "Since Obernetter introduced his collodio-chloride of silver paper, there have appeared many similar preparations, all of which, however, had the drawback that the film was apt to leave the paper, and the pictures were easily injured. A Mr. Ost, in Vienna, has recently prepared a collodio-chloride of silver with which he makes paper free from this fault, and which even permits the entire removal of the film from the paper, and its transfer to glass or porcelain. Mr. Ost has made faultless positives on glass of a size of twenty inches, and, by repeating the process, has produced new negatives of such excellence that they can be used as the original plates. Such a process is of the utmost value for the reproduction or multiplication of rare negatives: as, for instance, landscapes, or the portraits of deceased persons. The original negative can of course be retouched, likewise the positive; and we will finally obtain a negative in which all the results of the different retouches are incorporated. Mr. Herzog, in Bremen, a well-known landscape photographer, reproduces all his stereos by this process, and only prints from the duplicated negative."

Preparations for the Season.—The New York correspondent of the *Philadelphia Photographer* refers to preparations amongst professional portraitists in New York for the coming season. The hint to make such preparations by renewal of specimens, &c., is one which is worth the attention of all portraitists. He says: "The bright spring sun has had its effect upon photographers as well as upon their wives; the yearly mania of cleaning has extended its sway as far as the gallery and reception rooms of the craft, where we see new carpeting, new accessories, washed windows, and every other sign by which evidence of renewed and vigorous life tells its story."

Absorption of Light by the Air.—Professor H. Wild has continued his interesting investigations upon this subject in Germany, and the conclusion at which he has arrived is highly remarkable, the *Scientific Review* states. He finds that dry air is rather more transparent than damp air, though common observation of the clearness of the atmosphere after a shower, or in dry weather without fog, would induce a contrary belief. He gives for the coefficient of dry air, quite exempt from dust in suspension, and seen through a thickness of one meter at 10° C., and 719 millimetres of pressure, $a = 0{\cdot}99178$. In air likewise deprived of dust, at 13° C. and 719 m.m. pressure but saturated with damp, $a = 0{\cdot}99030$. It is therefore evident that in ordinary circumstances dust in suspension in the air diminishes its transparency in a very marked manner, and that if the atmosphere appears more transparent after a shower, it is because it is cleansed of this dust, and not, as some have thought, because it is saturated with damp.

Telegraphing in Fac-simile.—A provincial contemporary says:—"An invention, not many removes from one for telegraphing a portrait, is said by the *Post* to have been made by Mr. Meyer, an official engaged in the French telegraphic service. He has discovered a plan for telegraphing fac-simile. The details are not given, but if what is published is fact, the new system is as wonderful as the electric telegraph itself. There is no transmitter wanted; the sender of the despatch is his own clerk. The message itself does the duty of the interpreter, and controls the electrical power so as to make it perfectly faithful. 'That which the Meyer system gives us is not a copy more or less exact of the message sent to us; it is the fac-simile of our correspondent's writing, so that, thanks to this apparatus, telegraphic despatches will present, so far as regards exactitude and authenticity, all the guarantees now found in postal communications.' If this be not an enigma, and do not refer to some kind of cipher—and there is no reason for thinking that it does—Mr. Meyer will be among the famous of the future. We are further told that the apparatus is at work on the railway from Paris to Lyons, and the lines from Paris to Marseilles, and from Paris to Bordeaux will soon be provided with it."

Misuse of Photography.—At Bow Street, on Tuesday, Sydnoy Powell, of 31, Chandos Street, photographer, was charged with selling indecent prints and pictures. Mr. Abrams appeared for the prisoner. Mr. Parker, one of the inspectors of the E division, went in plain clothes to the prisoner's shop on Monday, accompanied by a person who was known to the prisoner as a customer, and was shown a quantity of obscene photographic slides and two oil paintings. The latter, though most filthy, were executed with great ability. They purchased a few of the photographs (one of them comparatively harmless), and the prisoner asked Mr. Parker if he thought he could find him a customer for the two oil paintings, the price of which was £105. Mr. Parker said perhaps he could, and called the next day with Chamberlain. also of the E division, and also in private clothes, who, after seeing the paintings, bid first 20 and then 50 guineas. The prisoner replied, however, that he could not take less than the price already mentioned—100 guineas. They asked to look at some prints, but he said he had sent them all away on the previous day; he could get them anything they might order, but he would not keep any in the house in future. He explained that he was obliged to be cautious, because the police were getting very sharp. Parker then produced his warrant, apprehended the prisoner, and seized the two oil paintings and a large quantity of obscene photographic slides. At the request of Mr. Abrams, who said he should be able to give a good defence on the merits, the prisoner was remanded; but Mr. Abram's application for the prisoner's application to bail was refused.—*Times.*

Photographic Presentation to Captain Shaw.—The firemen of the London Fire Brigade have, at the incitement and with the valuable co-operation of Mr. D. B. James, the photographer of Cannon Street, presented Captain Shaw with a musical album, fittingly embellished with portraits of all the officers of the Brigade. In accepting the testimonial of personal regard and *esprit de corps*, Captain Shaw mentioned that he had long desired to possess such a collection, but that the difficulty of obtaining so many good likenesses had seemed to him insurmountable.—*Daily Telegraph.*

To Correspondents.

James Maycock.—A tendency in the practice of photography to produce inflammation of the eyes has not come under our attention; but if a tendency to such inflammation existed, we can readily conceive that it might be aggravated by the fumes arising from collodion, especially if the collodion were old and made with methylated solvents. A little care, and ventilation of the dark room, might, we think, quite remedy this. It should be borne in mind that the vapour of ether is heavy, and falls to the ground. The dark room should therefore contain facility for ventilation through the floor as well as by the windows or roof. 2. Since you succeed so satisfactorily with the oxymel, we cannot recommend you to change.

Gallic Acid.—A saturated solution of gallic acid consists of about 4 grains of the acid in an ounce of water. After development, the print may be placed in ordinary water. 2. A good, soft negative is required for producing enlargements; not a transparency. 3. You will find instructions for producing transparencies on wet collodion in our Year-Book for 1868.

W. Hall (Brighton), writing on Mr. Sarony's photo-crayons, states that he was prepared to buy the designs to the extent of £1, but not to the extent of £5. He then proceeds to make some comments on Mr. Sarony's patent, from which we make some extracts, in order to point out that they are based on misapprehension. He says:—"Now, sir, I hold that the labourer is worthy of his hire; but to me it is incomprehensible how a leading artist like Sarony—a man who has reaped a fair share of the golden harvest, which others have sown—should claim an exclusive right—for what? An invention! Is it worthy of the name? Rather say a little dodge, which has cost him neither waste of money nor waste of brains. What has the profession come to, if its magnates resort to such a little shift to raise the wind? To many of the profession the principle is not new; but, I admit, the thanks of all are due to him for improvement, and for proving to the public what only men in his position can easily do, that this system has its merits; but to admit that he is entitled to levy black mail for anything that he has done, I do not. It is a manifest injustice to the profession, and he is unworthy of his name and high position." A moment's reflection must convince our correspondent that such ideas and such language are absurdly unjust. A sitter might as justly charge our correspondent with using the beautiful art of photography as a means of levying black mail upon his customers. Mr. Sarony has introduced a style of portrait which had not been done before, and has patented the mode of producing it. He offers this method of working to photographers on terms which he thinks will remunerate him, and not one of them is under any necessity of adopting it unless he can make it pay. Surely, then, it is in in the worst of taste to express annoyance at Mr. Sarony's terms. If they had been exorbitant, he would have had a right to fix them as he chose; but as the price of the designs for backing is really very moderate indeed, it is, we think, in the last degree unfair to abuse him. Those who do not choose to take a licence are precisely in the same position as they were before Mr. Sarony obtained a patent. They then could not produce such portraits, because the thing was unknown; now they cannot produce them, because the right to do so belongs to another, and they do not choose to pay for a share of that right.

Novus.—The *Philadelphia Photographer* is always illustrated. Its price is half a dollar (about 2s.) each number. It is published monthly. The *Photographische Mittheilungen*, published in Berlin, and the *Photographische Correspondenz*, published in Vienna, are frequently illustrated; the latter, in some form or other, generally so. We believe you can get any of them through Trubner, of Paternoster Row.

W. V. Foster.—We believe that Mr. Whiting's camera is made up to 12 by 10, but our own impression is, that it is more suitable for smaller sizes. We believe that it is his intention to advertise it, but we are not certain; we are not in possession of any business particulars, and have not the maker's address.

Amateur.—It is not uncommon for skies, when stopped out with water colour, to peel off the plate. Bates's black varnish is better than water colour. A piece of black paper answers well, using a little black varnish to paint round the horizon if necessary.

Amos Palmer.—There is a photographic department in connection with the Royal Engineers; but whether you would necessarily be employed in that department, in case of enlisting in the Engineers, we cannot, of course, tell you. The fact would probably depend on the opening which might exist for further assistance. Your possession of photographic experience would probably serve you considerably.

Young.—It would be bad taste of any one having produced an enlargement from your negative to exhibit a copy against your protest; but it might be a troublesome task to prevent him. The question is one which a lawyer could better answer.

A. Z.—It is probable that all the engravings you name are non-copyright, and may be copied without injury to any one.

A. B. C.—A plain and tolerably light-coloured background is, of course, most suitable for producing any kind of vignette; but, with a little skill and management, it will be possible to produce vignette transparencies for Sarony's photo-crayons from negatives with scenic backgrounds. The best plan will be to paint the back of the negative with black varnish, so as to stop out the images of all objects in the background. The stopping out may be brought close up to the outline of the figure, or it may be softened off a little, so as to form a vignetted edge. The negative so treated may then be vignetted, so far as the figure is concerned, in the usual way.

No Dark Room for Views.—See answer to W. V. Foster, above.

Wm. Beah.—We do not like silver dippers. It is tolerably certain that more or less of reaction is constantly going on between such a dipper and the bath, as any trace of acid would certainly attack the silver. Discard your silver dipper, which, from the symptoms you describe, is evidently mischievous. Use glass or porcelain. A strip of glass, with a shoulder cemented on by marine glue, is the dipper we prefer. Your bath is also clearly out of order. Dilute with an equal bulk of water, add a little carbonate of soda, and sun thoroughly; filter, strengthen, and try again.

Several Correspondents in our next.

Photographs Registered.

Mr. R. Griffiths, Truro,
Photograph of Mrs. E. Griffiths.

Mr. Meloni, Eastwood, nr. Todmorden,
Photograph of Mr. J. Paton.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 559.—*May* 21, 1869.

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PREVENTION OF CRACKED FILMS.

There are a few facts in connection with the subject of cracked negative films which, notwithstanding the fullness and frequency with which the subject has been discussed, deserve restating.

There was a singular unanimity of accord in the discussion at the last meeting of the Photographic Society, in regarding moisture as the chief cause of the cracking, and in approving of the storing of negatives in paper instead of keeping them in plate-boxes. The suggestion of Mr. Frank Eliot as to the use of paper rendered waterproof is manifestly of vital importance, therefore, in securing safety. To endorse that suggestion, and give it an immediate practical value, Mr. Russell Sedgfield writes, stating his own practice, and enclosing a sample of the waterproof paper he uses. He says :—

"Dear Sir,—With reference to the discussion at the last meeting of the Photographic Society, I enclose a sample of the paper which I use for packing and storing negatives. It is known as pitch paper, is used for packing goods which might be injured by damp, and may probably be obtained at most of the large stationers; price, about six shillings per quire; size, double imperial (45 by 29 inches).

"Besides packing negatives to put away, I use it for albuminized paper, prints, slides, &c., for export. For a moderate voyage it is probably quite sufficient, without going to the expense of tin-lined cases.—Yours truly,

Russell Sedgfield.

"1, *Park Road, Norbiton, Kingston-on-Thames, May* 15."

The sample enclosed is a strong brown paper, coated on one side with pitch or black paint, rendering it quite waterproof, and no bad substitute, for many purposes, for American leather cloth. It is to be obtained, probably, as Mr. Sedgfield states, from most large stationers, and, if not, as soon as the demand for it exists, it will, doubtless, be kept by photographic dealers. It serves admirably to pack photographs for travelling, and preserve them from damp, a point of importance which does not always receive as much attention amongst English photographers as it deserves. We occasionally receive pictures which are well packed in every respect except being waterproof, and which, having been exposed to rain, are spoiled with damp. We occasionally receive parcels of photographs from Germany which are invariably packed in this pitch paper, and this, with a wooden board or box, forms a perfect protection.

To return, however, to the protection of negatives. We have a suggestion to make in regard to this waterproof paper which may be worth attention. We recommend that bags of this paper should be made of suitable size, with a flap to wrap over when the negative is placed therein. Each negative should be first wrapped in clean, dry blotting-paper or smooth writing-paper, and a few negatives so wrapped up might be placed in each waterproof bag. In the case of negatives rarely used, the flap might be sealed down with thick india-rubber cement, which could, when required, be raised, by using care, without tearing the paper, which is very tough. For bags containing negatives in frequent use an india-rubber band might be used, which could be placed over the flap, which would be thus pressed very tightly down, and made almost impervious to moisture. It is probable that it would remunerate some photographic dealer to make such bags ready for use in order to supply to photographers.

Another fact in connection with the subject should not be lost sight of. There are two distinct kinds of cracks to which negative films are subject, and which—although probably both arising from damp as the proximate cause—have nevertheless a different remote origin. One kind is most aptly designated as the honeycomb cracking, and the other as the vermicular cracking. the former sometimes issuing in the latter. The negatives exhibited by Mrs. Cameron at the Photographic Society's meeting, although described as affected by the honeycomb cracking, were really well-marked instances of the vermicular cracking. In the first-mentioned form of cracking, the film really presents a series of honeycomb-like cells with well-defined ridges, which, unless especial care be taken to prevent such a result, eventually become a series of cracks of the form of the ridges. This form of defect may, if taken in time, be remedied, in the manner already described in our pages, by means of the vapour of alcohol; or, in some instances, by flooding with warm alcohol. The second form of cracking, to which the term vermicular has been applied, presents no ridges at all. It consists of a series of fine irregular cracks —as fine as a hair sometimes—taking the form of slug-tracks, sometimes more resembling the honeycomb markings, but so fine that it is barely possible to see any fissure on the surface of the varnish, and suggesting, at first sight, the idea that the collodion film has cracked under the varnish, an idea generally erroneous, as was proved by Mr. Blanchard at the meeting in reference to Mrs. Cameron's negatives, inasmuch as the cracks, visible enough by transmitted light, although scarcely perceptible by reflected light, were filled up and rendered invisible altogether by rubbing a little soot over the surface.

The honeycomb crack is unquestionably due to moisture, and is, we believe, invariably due to the presence of hygrometric salts left in the film, as we have recently described. The exact origin of the vermicular crack is less certain, although there is little doubt that moisture and changes in temperature are active agents in bringing about the final result. But, whilst we believe that the varnish has little or nothing to do with the honeycomb crack, we are inclined to believe that the vermicular crack may be largely due, amongst other causes, to the character of the varnish used.

How the varnish may cause such a result may be easily explained by analogy. It is observable that all bodies which swell very much when in solution, contract and tend to crack when a layer or film of the solution becomes thoroughly desiccated. For instance, glue or gelatine, when placed in water, at once swells considerably, and requires the aid of heat to make it fluid, and a layer of the glue applied in solution to a rigid surface tends to crack when thoroughly desiccated. Some resins have a similar tendency: copal, for instance. It swells before dissolving, somewhat like glue, and, as is well-known to artists, is very apt eventually to crack when applied to a painting. Mastic varnish, on the contrary, which dissolves without swelling, rarely cracks when so applied. If resins of the character of copal are employed in the preparation of photographic varnish, they may not unnaturally be expected, when exposed to changes of temperature or atmospheric condition, to crack in like manner. It should also be added, that as a thick layer of glue would more readily crack, being less elastic than a thin layer, so a thick layer of varnish having any tendency to crack would more suffer than a thin one.

Besides other precautions which have been recently named, and which are mentioned in an able letter by Mr. Thomas in another page—such as the use of clean and dry plates, perfect washing, and perfect desiccation of the film before and after varnishing—there is another little preventive worth remembering. If the collodion film be removed for about the eighth of an inch all round the plate prior to varnishing, so that the varnish flows over the edge of the film, and comes into direct contact with the glass, it affords a much better protection against the action of damp than it can do where the edge of the film comes quite up to the edge of the glass, and is not, or may not be, perfectly covered with the varnish.

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COPYRIGHT IN PHOTOGRAPHIC PORTRAITS, AND OWNERSHIP OF THE NEGATIVE.

The recent discussion as to the copyright in photographic portraits, evoked by the new Fine Arts Copyright Bill, has called forth an interesting letter to the Journal of the Society, from Mr. Peter Le Neve Foster, a gentleman whose opinion in the matter is entitled to much weight, not only for his personal fitness to form a judgment, but because, as a Secretary to the Society of Arts, under whose superintendence, we believe, the new Bill was drawn, he is supposed to be familiar with the full intent and design of the promoters of the new law. As, however, we feel very strongly that Mr. Foster's view of the case does less than justice to photographic portraitists, and is certainly opposed to their interests, we must again submit a few considerations to which we think Mr. Foster and those holding his view cannot have given due weight. First of all, however, let us quote Mr. Foster's opinion on the ownership of the negative, which, we are happy to say, we cordially endorse. He says :—

> Now the English law on the subject is extremely simple; the proprietorship of a negative rests on the same principles as the proprietorship of any other chattel which the photographer possesses, subject to that restriction which applies to everything else he possesses, of not using it for any unlawful purpose; that is, he may not use it to the prejudice of the copyright which the law has vested in another party, that party, in the present case, being the individual giving the commission. The lithographer's stone remains his property subject to similar restrictions. The negative is thus the property of the photographer, and he may do what he likes with it, subject to the above restriction, and subject, of course, to any special contract connected with it which he may have entered into, either for keeping it for a limited period, or for its non-destruction.

So far, we are entirely at one with Mr. Foster: this is the position we have at all times maintained. But whilst we believe it to be the English law on the subject, it must not be forgotten that it has been frequently denied, and that no decision on the subject has yet given that law a certain character. Not long ago Mr. Rejlander received a formal demand from the legal adviser of a gentleman for whom portraits had been executed, demanding the negatives as the said gentleman's property. A month or two ago we published a letter from a provincial photographer, in which he asked advice in relation to a demand made by a lawyer for a negative of a lady who had just died, the demand being made on behalf of the husband, who claimed the negative, taken years before, as his property. Some years ago it was the custom of Dr. Becker to demand, as a right, on behalf of Her Majesty and members of the royal family, the negatives of portraits for which they had sat, and he energetically contested the right of the photographer to charge for such negatives. We mention these facts, not to weaken in any degree the argument that the negative belongs to the photographer, but merely to show that such ownership is liable to be disputed; and this being so, it would, we think, be a powerful argument in the hands of an advocate claiming the negative on behalf of the sitter, if he could point out that the Legislature intended the copyright to vest in the sitter. It is therefore that we strongly object to what follows in Mr. Foster's letter. He says :—

> In the absence of any contract to the contrary, he may clean off the film and use the glass again; but so long as he keeps it he may not print a single copy from it without the licence of the owner of the copyright; and that owner, by English law, is the individual who has commissioned the picture, or, to use the words of the statute, "the person on whose behalf the work has been executed for a valuable consideration."
>
> I know that there are photographers and others who object to this law in principle. I cannot say I agree with them, for it does appear to me to be most unreasonable that, because I contract with a photographer to produce me a dozen cartes-de-visite, therefore the photographer, after supplying me with the portraits, should be entitled to issue as many more prints from the negative as he pleases for his own convenience or profit, or to gibbet me against my will on his advertising door-post. If any profit attach to it, surely the owner of the face, or other party who has paid for the taking of the portraits, is entitled to it, or, at all events, to have his wishes respected as to publicity.

We think Mr. Foster here states the case a little unreasonably. No photographer would dream, we apprehend, of claiming the right to issue as many prints as he chose for his own convenience or profit, against the will of the sitter, or even exhibit a portrait, or "gibbet against his advertising door-post," as Mr. Foster has it, in opposition to the sitter's expressed wish. But we entirely demur to the idea that when a sitter pays for certain copies of his portrait, according to a contract which expresses or implies simply the price of such copies, he should also acquire a copyright in the image produced by the skill of the artist. In the case of a painting it is natural enough that the copyright should vest in the purchaser, although, hitherto, that has not necessarily done so. But in any case where each portrait is practically an original, it is not unnatural that the copyright should pass with the picture, and the price, of course, is regulated accordingly. Whatever may be the existing law, it is clear that photographic portraitists have not believed that they sold the copyright of each portrait they produced to the sitter, and their contracts have not been made under any such conviction. As a rule, the price charged for portraits is based upon the conviction that not only more than one copy will be required at once, but that future orders for additional copies will be given. But if the law be as Mr. Foster believes it, and as the new Bill undoubtedly states it, photographic portraitists are unquestionably placed in an unfair position beyond that which belongs to the misapprehension under which they have framed their contracts. All the skill, thought, and pictorial power which the most accomplished portraitist can put into his work are lost to him the moment he has sold the first copy. The sitter, having acquired a copyright in the result of this skill, places it in the hands of inferior copyists, whose vile and fading reproductions are often attributed to the original artist; and he has not only the mortification of being robbed of anticipated further profit, but of also being not simply robbed of reputation, but of being endowed with a bad reputation. If the photographer be debarred from producing further copies, surely it would be but just that his work should be protected from being copied by others. Then, as we have already pointed out, an immense field for malicious prosecutions is opened by the law as Mr. Foster states it. The clause of the Bill which, referring to paintings, makes exhibition, as well as copying for sale, a piracy, subjecting the offender to a penalty of £20, refers to photographs, and for every copy of a portrait exhibited in the reception room of the photographic portraitist, the copyright of which has not been legally assigned in a written instrument by the sitter, the photographer is liable to a penalty of £20. To us it is manifest that the photographer should not be liable to prosecution on such unfair grounds. Mr. Foster adds :—

> Be this, however, as it may, the English law is clear, that, in the absence of any contract to the contrary, the copyright is in the party giving the commission. If a photographer desires to have the copyright, he has only so to frame his contract with the sitter: he can lay down his own terms before he takes a picture; and it will be for the party giving the commission to accede to these terms or not as he pleases.

We have before said that the clause in the existing Act is very clumsily expressed, and is certainly open to such a construction as Mr. Foster places upon it, although we think its meaning is by no means on the surface or unchallengeable. But what is obscure in the present law is made clear in the new Bill, which will, undoubtedly, make Mr. Foster's view the law of the future. The remedy which he suggests is much less simple in practice than appears in stating it. Hundreds of cases will occur in which it may be inconvenient to secure the written contract necessary to over-ride the conditions of the statute; but if the new Bill become law without modification, it will be necessary for photographic portraitists to reframe their business arrangements, and endeavour to secure written agreements, which shall protect them from the injurious operation of the law, wherever it is possible.

Mr. Foster adds a postscript to his letter, as follows :—

> Since the above was penned, I am told that the Photographic Society has appointed a committee to endeavour to obtain an alteration of the existing law on this point, by getting a provision to that effect inserted in the Bill now before the House of Lords, for consolidating and amending the law of copyright in works of the fine arts, and which, so far as this point is concerned, does little more than re-enact the existing law. It is not for me, who am not a member of the Society, to criticise its proceedings, but I trust I may, without impertinence, venture to express my opinion that the committee will have some difficulty in convincing the Legislature of the justice or expediency of what they are seeking.

From no spirit of antagonism, but because we so highly respect Mr. Foster's opinion, we deeply regret that part in the last sentence, because it suggests that the aid which Mr. Foster possibly might have given in this matter can scarcely be looked for, and because it implies that photographers, as represented by the Photographic Society, are seeking what is unjust and inexpedient. Now, the sole aim of this Committee of the Society, as very definitely expressed by its President, is to see that the balance of justice is evenly held between portraitists and their sitters; that the latter should be protected against the acts of unscrupulous photographers, if such there be; and that respectable portraitists should be protected against unscrupulous sitters: in short, that the rights of each should be expressly defined. It cannot be unreasonable that an art industry like portrait photography, surrounded by so many especial conditions, should require and receive especial consideration, and provision distinct from that applying to paintings or other arts not of a multiplying nature. As an art permitting of multiplication of copies, photography is most analogous to engraving or lithography, and no one would dream, of course, of asserting that a copyright was acquired by the purchase of a copy of an engraving. Of course, the conditions are not the same: neither are they in regard to paintings Photography occupies a distinct position, with conditions belonging somewhat to both, and it requires in any act of legislation that these conditions should be distinctly recognized.

We have one more suggestion to make, and a somewhat important one, which has been hitherto overlooked. The sitter has to acquire a copyright in the portrait he pays for, and in none other. As the photographer generally takes two or three negatives, sometimes half-a-dozen, and may, without difficulty, take twice as many, to whom does the copyright of these belong? Not to the sitter, because he only acquires copyright in that portrait for which he pays: clearly, then, to the photographer, who takes them to please himself. If he choose to publish or exhibit these, the present or contemplated law affords the sitter no protection whatever, but leaves him to that sense of honour which is supposed to govern the respectable portraitist at present. Possibly this consideration may afford additional reason for special consideration of photographic portraiture in the new law.

PARCHMENTIZED PRINTS AND PERMANENCY.

Mr. Spiller, writing in the Journal of the Photographic Society, describes the results of treating photographic prints with dilute sulphuric acid, to parchmentize the paper. The prints in question were placed under treatment twelve years ago by Mr. Crookes, who at that time brought the subject under the attention of the Photographic Society, proposing this treatment as a means of securing greater permanency in the prints. Mr. Spiller has recently had opportunity of examining the specimens, and states that the condition of preservation in which he finds them is undoubtedly suggestive of the value of the treatment in question as a means of securing permanency. The subject is of sufficient importance to demand careful consideration, and we shall refer to it again shortly.

A BRIEF CAREER FOR PERMANENT PHOTOGRAPHS.

Photographers have become so accustomed to lamentations over the transitory character of photographs produced by the usual methods, that many of them have come to believe that it is true that all photographs, beautiful or ugly, must fade and "pass into nothingness." It may be worth while to remark, in passing, that whilst it is undoubtedly true that many silver prints fade, it is not true that many of them, if any, in that fading disappear. They lose their pristine beauty, but in rare instances indeed, belonging to very inexperienced times and very rude treatment, have the images been entirely lost. But whilst photographers are familiar with the idea of silver prints fading, it is something new and startling to find a brief career predicted for carbon prints and other permanent photographs; and it is as ludicrous as novel to find it alleged, as a reason for this brief career, that it is the interest of photographers that photographs should fade. Yet this is the grave assertion of a writer in a journal not usually given to joking. The *Spectator* of May 8th, in a review of Dr. Billing's "Science of Gems," a volume copiously illustrated with photographs, makes the assertion to which we refer. After damning the art with faint praise by admitting that nothing can be better than photography when small works of art or mineralogical specimens have to be represented—because, the writer adds, these "are amongst the few objects which photography does not caricature!"—he proceeds as follows :—

> The only disadvantage attending it is that, after a few years, Dr. Billing's volume (like all those similarly illustrated), in place of a series of gems, will present a copious supply of pages on which children will appear to have been eating bread-and-treacle. In sober truth, all money spent on getting up or on buying books containing photographs (as the so-called art has hitherto been practised) is

> money wasted. And it is so completely to the interest of photographers that this should be so, that we confidently predict a very brief career for "autotype," "carbon process," "etching by photography," or any other of the professedly permanent methods which, from the very beginning of photography, have endeavoured to establish themselves.

Photography and photographers have often been subjected to the sneers of the ignorant, the thoughtless, and ill-natured; but for downright impudence, commend us to the writer of the above. Here is an imputation upon all who practise a most extended, beautiful, and useful art industry, to the effect that they prefer that their work should be bad and unstable, because it is "their interest," in order, we presume, that it may require to be done over again! Does this writer really imagine that respectable tradesmen of any kind find it their interest to supply faulty goods in order that they may require renewal? It is generally supposed that excellence of the goods supplied is the surest means of securing increased patronage. This, the lowest motive, which simply refers to trade profit, would be sufficient, in most cases, to ensure the application of every effort to secure permanency. But, apart from such motives, we can assure the writer in question, that by far the larger proportion of those engaged professionally in photography love their art, and would willingly make any reasonable effort, and sacrifice any reasonable amount of profit, to secure permanency in their works, and that this love for their art affords the surest pledge of the ultimate success of the various modes of securing permanent printing which are now on their trial amongst photographers.

We may conclude with an extract from a letter from Mr. Russell Sedgfield, referring to the article in question. He says:—"The idea that it is so completely in the interest of photographers that their works should fade is not original, but has usually been urged in joke. The *Spectator*, however, is not given to jokes, and is evidently serious; and with equal seriousness allow me to suggest that it is a pity such advantages should not be extended. Is it not as completely to the interest of painters, sculptors, and authors that their works should perish like those of photographers and tailors? I will only add that there would then be plenty of room for the exhibition of modern paintings and the storage of modern books, without further expensive enlargements of libraries and museums."

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INDIAN PHOTOGRAPHS.

The time when the mention of Indian photographs suggested masses of soot and whitewash is gone by. We have no longer the crude, black foliage, and chalky white buildings, white sky, and white water; or pictures of magnificent temples with harsh glinting lights and black heavy shadows, without delicacy or detail, the beautiful tracery and rare carving in the architecture being half lost. It was at one time believed amongst photographers that, partly owing to the rapid decomposition of some of the chemicals, and partly to the intensely glaring light and cloudless skies, anything like delicacy and harmony in photographs of tropical climates was almost impossible. The examples which have reached this country from time to time for some years past—the productions of Major Macfarlane, Shepherd and Bourne, and others—have long since dispelled this notion; but if any trace of it had remained, it would have been effectually removed in the minds of all who were privileged to see the splendid collection of prints of Indian subjects exhibited at the Photographic Society on the evening of Tuesday week. There were several hundreds of pictures, consisting chiefly of Indian landscapes and architectural views, interior and exterior, amongst which it is no exaggeration to say that there was not a bad photograph; scarcely one which would not compete with the best examples taken in this country. Delicate, detailed, and harmonious, and, at the same time, admirably brilliant, they left little, if anything, to desire, except time to examine deliberately the wondrous detail of the tracery in many of the temples hewn out of one solid rock. An admirable feature in the prints was the presence of fine clouded skies, in most cases from separate cloud negatives, skilfully printed in, contributing much to the pictorial excellence. Some Egyptian pictures amongst the collection were not less perfect; amongst them the finest picture of the Sphinx we have seen, giving the most perfect suggestion of its colossal character and the calm grandeur of effect, notwithstanding the ravages of time and irreverent hands.

These pictures are very instructive. Capt. Lyon mentioned some of the difficulties of photography in India, and these can be readily conceived. But the natural difficulties have always existed; to what, then, should the marvellously improved results be attributed? Primarily, it should always be conceded, to increased skill in the men who have produced these results. In a very wide sense we are always disposed to give credit to the man rather than the method. But a method rendering excellence possible is of course an imperative condition of success, and we believe that the use of bromo-iodized collodion and iron development are imperative to success in tropical climates. With simply iodized collodion, and its rapid tendency to decompose and become insensitive, and pyrogallic development, delicacy and harmony, except as occasional results, were impossible.

The conditions of success involved in the use of bromides and iron development, so long opposed by some of the old authorities in the manufacture of collodion, are now universally prevalent; and little of the difficulties once common are now experienced by photographers. As a rule, commercial examples of collodion meet all necessities; but where strong sunlight or other causes produce strong contrast in subjects, it should be remembered that the free use of bromides is the legitimate and rarely failing remedy.

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Foreign Miscellanea.

In reference to the proposal, recently made in this country, that photographers should employ the velocipede as a means of transport when performing landscape work, the *Moniteur de la Photographie* very aptly calls attention to the fact that, by this arrangement, the two great inventions with which Nicephore Niepce's name is connected would thus be combined.

In the *Bulletin Belge*, a correspondent recommends the practice of chromo-photography for finishing off portrait pictures; the method proposed is to obtain two prints upon sized or plain Rive paper, one somewhat more vigorous than the other, and to colour them in a suitable manner. By subsequent treatment with a fatty compound they are rendered transparent, and then superposed one upon the other, the more opaque print being underneath, and then framed, so as to protect them from dust.

Another instance of Royalty doing honour to photographers has occurred in Austria. The Emperor has decorated M. Joseph Schultner, one of the members of the Vienna Photographic Society, with the order of the Iron Crown of the third class.

The South Austrian Industrial Association has awarded their large silver medal to M. Julius Leth, in consideration of his valuable process of photographing upon enamel and porcelain. M. Leth demonstrated the details of his process before the Association, producing, in the presence of his audience, the positive prints upon glass by means of an exposure of two minutes to a magnesium lamp, transferring the gelatine films to enamel plates, and burning-in and completing the same within a period of ten minutes.

At the April meeting of the Vienna Photographic Society some examples were shown of M. Mariot's (of Gratz) galvano-photographic process. They were carte-de-visite size, and similar in appearance to the most delicate copper or steel engravings. The process has already passed through the experimental stage, and M. Marion announces himself as willing to furnish copies of any negatives that may be forwarded to him.

M. Davanne has published his investigations touching solutions of the bichromates of ammonium and potash; his results demonstrate how much of these substances a certain quantity of water will take up, and the density of the liquids thus obtained. Dr. Hornig, of Vienna, has been working in the same direction, and recently delivered a lecture on the subject before the Vienna Society.

A correspondent complains, in the *Archiv*, of a recently published pamphlet, purporting to contain important revelations in connection with photography, which is sold for the sum of twelve florins, and which, among other *soi-disant* secrets, discloses the use of muriatic acid for cleaning glass plates, and the addition of citric acid to the sensitizing bath as a means of enhancing the keeping qualities of albuminized paper.

The *Correspondenz* contains a long report upon Dallmeyer's new aplanatic lens. A visit paid by M. Wallner to Albert's photographic establishment at Munich is also an interesting item in the same journal.

M. Pommer, at the Vienna Society, stated that there are three especial difficulties with which photographers have to contend in the use of collodion paper: the tendency of the prints to roll up during washing, their liability to be insufficiently toned, and the separation of the film from the paper. The rolling up may generally be prevented by employing a stout paper as a basis for the film. The difficulty in toning is due either to the employment of impure water for the preliminary washing, or to the use of an unsuitable collodion. The separation of the film is neither owing to the employment of an acid toning bath nor strong fixing bath, but to unskilful preparation of the material. M. Pommer has invariably employed collodion paper for a period of eighteen months in the preparation of his positive prints, and is well satisfied with his results.

A new photographic journal has just been published at Berlin under the title of the *Photographische Zeitung*.

At the last meeting of the French Photographic Society M. Secretan exhibited to the members a copy of a work published in Paris in 1842, entitled *Excursions Daguerriennes.* The work is illustrated by engravings taken from Daguerreotypes, and includes three prints produced, in 1841, by Daguerreotype plates engraved direct by M. Fizeau's process.

M. Steinbach, well known as a manufacturer of photographic papers, died on the 17th March last at Malmedy. He was in his forty-third year.

M. Max Gehmoser, of Munich, claims to have discovered a new method of photo-lithographic printing.

In discussing, at the Berlin Society, M. Grasshoff's proposal to rub cuttle-fish powder over a varnished negative previously to its being retouched, exception was taken to the recommendation, on the score of risk of injury to the film. M. Milster preferred to retouch with the pencil upon a brilliant surface, and recommended for the purpose the use of Siberian graphite.

M. Cristian Grabe, in the *Mittheilungen*, urges the speedy adoption of an international system of weights and measures. He points out that in Germany alone there exist three different kinds of inches; viz., the Hamburg, the Rheinish, and Leipsic inch, and these again differ from the French centimetre. The same confusion exists as regards weights. With these discrepancies it is impossible to adopt photographic measurements and proportions alike in all countries.

Dr. Vogel, in the same journal, has an article upon the construction and lighting of studios, in which he discusses the validity of certain theories which have recently been advanced upon the subject in Austria and elsewhere.

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Introductory Chapter.—Dodges.

Without having recourse to the cavilling crotchets of metaphysical argumentation, it would prove an uneasy task to dispute the *not* strictly correct axiom, that "all things must have a beginning." I therefore take it as granted that the majority of my readers prefer what is generally received as matter of fact to metaphysical speculation, and will readily grant me the privilege of offering, as a *beginning* to the new series of articles I purpose writing, a few remarks on the subject of photographic dodges. Let it, however, be clearly understood, ere I move beyond the threshhold of my text, that I employ the term "dodges" under *vehement protest*, because I regard the word as one not merely misapplied, but one which is too degrading in its associations to create the impression it is employed to convey. Proof: Lexicographers are pretty well agreed in ranking "dodges" among such suspicious characters as hocus-pocus, imposition, jockeyship, quackery, charlatanism, and delusion. If, therefore, we accept these authoritative definitions, and for an instant allow the possession of moral qualities to words, dodges sink to a state of degradation which render them unfit for respectable companionship—certainly unfit for the duty the word is used to imply in photography. Such being the case, it behoves me to enquire whether it would not be more wise to select some more happily suggestive word, that could more honestly represent the photographic end to which the sneaking term dodges has been so inconsiderately applied. At first sight it might, to some, appear a mere war on words to cavil over a term that has been selected by photographers to represent a contingent adaptation of means to such occasional demands as are not immediately provided for by the ordinary resources of the art; but I think that on more mature deliberation it will readily be admitted that the most politic course would be to prevent, if possible, an erroneous impression from spreading among those of the "outer world" who judge words by their legal signification, and not by the somewhat arbitrary rules of technology.

Much has been said in language condemnatory, more has been urged by argument commendatory, with reference to the question of dodges; but, thank Heaven! those legitimatists who abhor the smallest approach to "sophistication," as a learned critic once defined the "dodging process," are now become an isolated race, whose wayward eccentricities sometimes lead them to practise, on the sly, the means of improvement which they strongly and openly condemn. To my mind it seems as reasonable to expect that a toothless individual should abstain from solid food because mastication, under such circumstances, can be executed only by some artificial contrivance, as it is to raise quibbles over a photographic masterpiece because some portions of its perfections are due to means not immediately provided by the negative. I say, if to dodge is a photographic sin, by all means snuff out the higher branches of photography at once. Let no niche of fame be coveted; let the gates that lead to the temple of art be chained, bolted, double-barred; and let us not complain if the Cerberus of art should growl at or tear to pieces any presumptuous photographer who would daringly trespass on the sacred domains of refinement: for I have no hesitation in declaring that but for the valuable—nay, indispensable—aid found in dodges, most of the *most* famous composition photographs known could not have been produced. Painters, both in oil and water colours, dodge to a far greater and more successful extent than photography can hope to imitate; but they, more happy in the descriptive term selected, may dodge on, and the more skilfully the dodging is applied to their pictures, the more eloquently are the merits of superior "handling" recited.

Here I set aside my protest, for time presses; therefore, as the term dodges is best understood by the class most interested, I submit the matter to some one more learned than myself in the antiquarian science of verbal derivatives, whilst, for obvious reasons, I continue to apply the non-descriptive term "dodges" to the further remarks I have to offer on the subject.

The question has often been raised, whether the practice of dodges is consistent with those natural truths which photographers are supposed literally to reproduce; but I am inclined to think that those who object to any departure from the usually adopted track have not duly considered the more rational side of the matter. I contend, that if photography ranks, or is desired to rank, as a pictorial art, the chief aim of a photographer should be to produce as perfect a picture, artistically as well as technically considered, as the resources of his art will admit of. If a clod of earth can be made to represent an object not otherwise provided, yet required, to secure the desired effect, then, I say, by all means secure its services. If to block out, tone down, to add greater breadth of light and shade, by ingeniously contrived devices, are the means by which artistic effects can be produced, it can scarcely be denied that recourse to either of these dodges is legitimate. If a scene photographed at "John o' Groats' House" can be made to combine with another taken at Land's End, and the combination picture thus produced expresses the sentiment the artist desires to convey, then, I say, the dodges practised by the photographer to produce a harmonious union are as admissible as the result would be commendable. I unhesitatingly contend that photographic dodges can be rationally considered prohibitory only when clumsily executed. As art is most legitimately applied when art is adroitly hidden, so dodges become ennobled when the means resorted to by the photographer are concealed from the sharpest critical observer.

"Just my opinion!" observes some would-be promoter of a school of secretiveness; "I say, dodge who can, but let them keep secret from the outer world the means employed."

Why make a secret of the matter? Artists make no secret of the assistance they extract from lay figures, dilapidated cradles, rusty suits of armour, sketches taken by nobody knows whom, also from sponges, pumice-stone, hand brushes, and bread crumbs. If to construct a picture is the end aimed at, and a picture in the strictest meaning of the term is produced, why be ashamed of the means resorted to? I am of opinion that the more skilfully a photographer is capable of dodging, the less mechanical does his work become. He might accept as a general axiom that nature cannot err; yet will be daily presented to his mind the fact that nature, taken piecemeal, needs intelligent revision. Man's greatest and grandest mission is to improve nature by means which nature herself provides.

This proposition will probably by some be considered blasphemous; it is, nevertheless, true. This, however, is not the place to enlarge much on so broad a topic; I merely broach the subject because of the proneness of some photographic art-critics to shout "Blasphemy!" whenever the common-sense assertion is made that earth and sky cannot at all times be artistically mated, except dodges are resorted to. Believing in the eternal fitness of things, those pseudo-art critics suppose that as nature is truth, so art becomes most harmonious when nature as she presents herself is literally copied. I beg emphatically to differ on this question. Sound is a natural production; but sound becomes harmony only when the musician avails himself of those natural laws which enable him to regulate the scale of vibrations, and so produce from his instrument soothing sounds which delight and gratify the ear. Again: clouds are natural objects, always pleasing, ever beautiful; yet, were it possible to include the clouded sky in every photographic landscape produced, it would often be found that cloud-forms are seldom in keeping with the scenes o'er which they hover, if regarded from a pictorial point of view. This statement might prove startling to some; but I would have such consider that the case is not an isolated one: we are surrounded by similar examples, which prove that nature provides, but man must guide; and this power of guidance has set up the great pyramid of invention, of which civilization forms the apex. Inventions of every kind are dodges directed to a desired end. Nature supplies the raw material, but the rude matter needs the intelligence of man to mould it for purposes of utility and beauty. Nature's laws are full of harmony. She does not supply one rule to the engineer, and another to the artist. Her lessons teach one and the same truth: "Shape your labours in such a way that your productions may harmonize with my laws and your intelligence." The differences between the productions of the engineer and artist are simply these: to the first can be applied palpable tests, whilst the latter can only be judged of by the effect they produce on the mysterious sympathies which involuntarily are made to vibrate within us. The moral of these latter remarks is obvious when applied to photography: if nature is not harmony when she is presented to the camera, photographers may make her so. The means they must employ are invention and dodging. Depend upon it, the brain of a skilled artist teems with dodges: and brains only can produce a picture by any process. When Turner once detected an artist-in-embryo taking a surreptitious peep into his paint-box, the great eccentric gruffly exclaimed, "'Tisn't there!" In like manner, I would have it shouted into the ears of those who are ever on the search after the formulæ and means employed by successful photographers, "It isn't there!" Nature will consent to be guided by such only as are capable of taking the helm.

Then, I say, dodge on when perfection without its aid stands aloof; dodge in the production of the negative; take advantage of the wide scope for dodging given by the process of silver printing; and to those who do not know the way, I shall endeavour to instruct them.

In concluding this my introductory chapter, I would just observe, that in that portion of my design which includes "failures" and "remedies," I am desirous of obtaining relief from the many weary hours of advice-giving by letter to those who meet with similar failures; and I therefore request, as a favour, of any of my readers who may desire information of a special kind, to forward full particulars, that I may embody the desired information in future articles. My next will treat of Salomon prints, and how to produce them.

ON RETOUCHING THE NEGATIVE.

BY JOHANNES GRASSHOFF.*

Many complaints which I receive bearing upon the subject of retouching negatives are based upon the unequal manner in which the varnished surface receives the graphite rubbed from the pencil; sometimes a large quantity of the black-lead adheres to the negative during the operation, and sometimes but a slight trace of the material attaches itself. Much depends upon the degree of hardness of the pencil selected. I always employ the best (manufactured by Faber), of Siberian graphite, using four degrees of hardness, from Nos. 1 to 4, according as the varnish film is soft, or hard and dry. Thus, immediately after varnishing, No. 1 pencil is generally the most suitable; after four or six hours, No. 2. If a day has elapsed, I generally use No. 3; but, under certain circumstances, No. 4.

My experiments, conducted with a view of rendering the varnish more ready to take up the blacklead, have guided me to a peculiar method of manipulating which I will here describe. I obtain some *ossa sepia* (which may be purchased in sticks, at a very reasonable cost, at any druggist's), and scrape off a small quantity by means of the finger-nail, sprinkling the same over such portion of the negative (I am talking here of portrait negatives) requiring to be retouched. This very finely-divided powder is now rubbed over the surface—as, for instance, the head of the portrait—with the finger until a sufficiently matt surface has been produced, and upon this the pencil may be worked very effectually in the usual manner. When held against an intense light and viewed as a transparency, fine hair-lines are visible upon this part of the negative, but these are not seen in the least degree during printing. For some considerable time I have employed this mode of proceeding, and can, therefore, safely recommend it, more especially as the shadows in the face are by its means rendered more delicate, a very welcome and important consideration in the manipulation of lady portraits.

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* *Photographische Mittheilungen.*

The practice of treating the varnish with oil of turpentine immediately before retouching, in order to facilitate the employment of the pencil, is a very good mode of proceeding, but possesses the disadvantage that the application of indian ink to which gum has been added, in order to give greater opacity and body, is rendered impossible.

Negatives likely to be much used—as, for instance, stereoscopic views, portraits, &c.—is very essential, and should be preserved, as much as possible, from all external risk of injury. To effect this, it is well to coat the negative in the first place with thin amber varnish, as Bedford recommended some time since, taking 1 part of ordinary amber varnish (the finer qualities of amber varnish dry too slowly, on account of the large quantity of oil they contain) and 8 to 10 parts of oil of turpentine, and filtering the mixture carefully before use. Let the negative treated with this varnish stand till the next day in a locality sheltered from dust, and then manipulate very carefully with an exceedingly soft pencil. After drying thoroughly, the surface will receive water-colours with the same readiness as the black-lead.

When the retouching upon the amber varnish has been completed, the negative is varnished in the ordinary manner, the plate being slightly warmed previously to the operation; further retouching can afterwards be effected if necessary.

The method of coating unvarnished plates with a solution of gum or gelatine, and then retouching them, I have practised for a considerable period, but have found that negatives of this description, when subjected to extremes of temperature or to the influence of damp, do not exhibit those permanent qualities which a valuable negative should possess; amber varnish used in the manner described forms a much more permanent protection.

ON A GREATLY SIMPLIFIED PROCESS OF PRINTING IN CARBON OR OTHER PERMANENT PIGMENT.

BY J. R. JOHNSON.*

I.—Preliminary Observations.

The process about to be described, and all those alluded to in the course of these observations, are based upon the fact discovered by Mungo Ponton, viz., that a solution of a salt of chromic acid, and particularly the bichromate of potash, becomes sensitive to light when spread upon paper.

Becquerel showed that the action was much more energetic upon the size of the paper than upon the paper itself. Poitevin showed us that albumen and other analogous substances have their properties entirely changed by the joint action of light and the bichromates; thus, instead of mixing with water in all proportions, they become insoluble in that menstruum, and acquire an affinity for fatty bodies. He thus laid the basis of all subsequent processes of photo-lithography; indeed his process, which has ever since been successfully worked by MM. Lemercier and Co., of Paris, is superior to most of the modern processes of photo-lithography, which are only capable of rendering line or stipple; while the original process of Poitevin enables us to obtain considerable half-tone, thus resembling the modern processes of Tessié du Motay and Albert.

A fact of greater importance to our present purpose is his application of the insolubility of albumen under the action of light and the bichromate, to fix or imprison a pigment mixed with it, and thus to obtain a coloured image. Hence, all our subsequent efforts at pigment printing, for all start from this point. To effect this, he simply mixed a finely ground pigment with the sensitive agents, albumen and bichromate of potash, and spread the mixture upon the surface of paper in an extremely thin layer. When this was dry, it was exposed under a negative, and, after exposure, was well washed and sponged in water, when the parts unacted upon by light washed away, and those acted upon remained attached to the paper. If the subject be in line or stipple, considerable success may be achieved, but little or none if the subject be in graduated tint, that is, possess half-tone.

If any one repeat this mode of operation with Swan's gelatine tissue, he will find that neither line nor stipple is obtainable; in fact, the conditions are totally dissimilar. Poitevin, to be successful, must have a minutely thin layer, which will be penetrated by the light transmitted through the finest line of the negative; while Swan lays on so thick a coating that it is practically impenetrable by light passing through the barest portion of the negative.

Pouncy, whose first patent (never completed) follows that of Poitevin, succeeded more perfectly than his predecessor towards the production of half-tone. He operated precisely like Poitevin, but used a porous paper, and brushed the sensitive coating into its pores. By the action of light the mixture becomes insoluble under the transparent parts of the negative, and even those least acted upon were more or less retained, being in contact with the paper instead of having a coating of soluble gelatine interposed between them.

Burnett and Blair are still more worthy of note, having introduced a new feature into their operations—that of printing from behind the paper, so that the parts rendered insoluble may be in contact with the support, and the soluble gelatine unacted upon by light on the surface may be easily removed by water without undermining the insoluble portions forming the picture. By rendering the paper supporting the sensitive coating translucent by means of oil or varnish, Mr. Blair obtained a considerable amount of success; but there were certain objections which induced him to abandon it for other and more complicated methods. We would, however, here again point out the wide difference between the prepared paper of Mr. Blair and the paper tissue of Mr. Swan, which is the basis of the process I am about to describe. In its perfected state Mr. Blair's paper is transparent and impervious to water, a quality which would entirely unfit it for use in Swan's and analogous processes.

The next important step was made by Fargier, who coated a glass-plate or other plane surface with the sensitive compound, and exposed it under a negative. When exposed, he coated it with a layer of collodion, and then plunged it into warm water. The fluid penetrated the collodion, dissolved the gelatine unacted upon by light, when the pellicle of collodion floated, bearing with it the insoluble-pigment picture. Most delicate results were thus obtained; but the manipulations were found tedious and uncertain.

We now come to the most important step in pigment printing which had yet been made—that of Mr. Swan. Most unworthy attempts have lately been made by interested persons and their agents to decry the labours of this gentleman; but the fact remains undisputed, that by his modifications alone of the processes I have alluded to, carbon printing has been made a practical and commercial process, instead of one merely experimental and tentative. It has been worked on a larger scale than any other process of printing by Mr. Braun, of Dornach; and the two folio albums on the table, part of a series of thirty-five similar volumes, full of different specimens, show to what extent and with what success it has been practised.

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* Read before the Photographic Society of London, May 10th, 1869.

Mr. Swan commenced by coating his plate with gelatine, like Fargier, but poured the collodion upon it and removed it previous to exposure: this he called a tissue; he subsequently made this tissue more easily manipulated by backing it with paper, and this being successful, he ultimately found that he could dispense with the collodion coating. The evidence of a most respectable and influential inhabitant of Newcastle, who followed with much interest Mr. Swan's experiments, has been made on oath to show that these modifications were made by Mr. Swan himself before their publication by others, and were therefore legitimately inserted in the complete specification, the law allowing six months' delay for the express purpose of making such improvements and modifications.

The tissue thus formed may be either made sensitive by the introduction of the bichromate at once, or by subsequent floating. When dry, it is exposed under a negative, and the hardened insoluble image or potential image is then on the surface, and would become undermined and wasted away if the tissue were immersed in water, as in the process of Poitevin and Pouncy.

Mr. Swan therefore mounts the tissue upon a support previous to development; this support may be either temporary or permanent. If permanent—that is, if the picture be intended to remain upon the support finally—albumen coagulated by alcohol or heat is the cement employed, but in this case the images are reversed if ordinary negatives be employed. Mr. Swan therefore proposed to mount the picture previous to development on a "temporary support," using india-rubber as the cementing substance, heavy pressure being required to bring the surface of the coated gelatine and the paper coated with the caoutchouc into perfect contact.

He then mounted the developed print upon another paper by means of gelatine or other similar cement, and removed the temporary support by softening the caoutchouc with benzine, and then tearing the two papers asunder. The gelatine was afterwards rendered insoluble by the immersion of the print in alum. In the Year-Book of the Photographic News of 1868, Swan described a peculiar manipulation, by which the use of the press and the subsequent immersion in alum were dispensed with. He took a weak solution of gelatine, and added a small quantity of chrome alum to it. He then immersed both the developed print and the paper upon which it was to be mounted in this solution, and brought the two surfaces together under it, thus expelling all air. The adhesion was perfect with certain precautions.

Edwards substituted the gelatine compound of Swan, just referred to, spread upon paper, for the albumen-paper rendered insoluble by spirit, a modification of very doubtful value; but the substitution of Mr. Swan's manipulations, hitherto only used in one part of the process, for those which Mr. Swan had alone used in another part, is due to Mr. Edwards, and their advantages were first recognized and applied by him. They were suggested, long previously to Mr. Edwards' Patent, to Mr. Swan, but he failed to see their importance.

In the preceding observations I have omitted to mention in its proper place that M. Despaquis, the holder of M. Poitevin's patent for carbon printing, has, for some time past, made very beautiful carbon prints upon talc, by coating that substance with the sensitive compound, and printing through it, washing away the soluble gelatine from the back.

In the *British Journal of Photography*, April 17th, 1868, Mr. Carey Lea shows a very similar plan, but substitutes glass for talc, to which he confines himself, finding that paper rendered transparent will not do, but predicts that in the future the difficulty of using transparent paper may be overcome. The only novel features in Mr. C. Lea's contribution are, the use of reflected sunlight for printing through the glass, and a method of coating the plate before the exposure with gelatine, previously spread upon paper, which, inasmuch as it contains sugar, and sticks readily to the moistened fingers, and only too often to the negative, is a very obvious proceeding.

I have thought it necessary to bring before you these matters (although they are well known to many of you, and have been already recorded very fully, and in a most lucid manner, by Mr. Simpson, in his work on pigment printing), because they have lately been the subject of much comment and much distorted statement in the pages of an obscure publication. I venture to think, Sir, that the history of the invention of carbon printing is a worthy subject of discussion for this Society, and I recapitulate these known facts as a challenge to those who dispute them, in the hope of raising that discussion.

II.—Principles involved in the New Process.

I will now proceed to describe the process which is the chief subject-matter to which I have to call your attention.

I venture to think that its main features are new, and that they are founded upon several observations which have escaped previous experimenters.

1. The first observation is one which I arrived at by a process of exhaustion. Being desirous of attaching the exposed film to a plate of metal for the purpose of development, I tried every form of cement, until at last I found that no cement at all was necessary, but that, if the film was well washed in water, the sugar being removed, the insoluble, inadhesive film would readily adhere to any plane surface impermeable to water, if air were excluded. The novelty of this fact has been called in question by Mr. Carey Lea, on the ground of his having previously stuck the soluble, adhesive tissue upon glass previous to development. I appeal to you whether there is any analogy between the two cases, with the single exception that water is the common medium employed. The immediate object is different; the substance employed is different; and the ultimate end is different, his sole object being to obtain transparencies on glass, my chief object to obtain perfect photographs on paper.

2. The second important observation is, that, if we cover the surface of a plate of glass or metal with a minute layer of some solid fatty or resinous body, the adhesion still takes place, and is sufficient during development while the film is wet, but prevents the adhesion after the film is dry. Hence a plate of metal or glass so prepared may be used as the temporary support during development, provided that that body used for coating it is infusible at the temperature employed.

3. The third important observation is, that the dry film, when separated from the greased plate of glass or metal, has exactly the surface of the support. If this be polished, the surface of the film is polished; if this be matt, the film has a matt surface; and if the surface of the plate be grained or tooled, the removed film of gelatine presents corresponding granulations or tool-marks. Prints, may, therefore, be obtained at will with every kind of surface, from the highest polish to the grain of coarse sketching-paper or its imitation.

4. The fourth important fact is, that the gelatine film, which, although insoluble, absorbs water readily, and softens under its action, and which is usually attached to paper by gelatine and alum, forming a cement which is likewise more or less absorbent, may be rendered entirely non-absorbent, and may be so fixed to paper that no friction, even under water at a boiling temperature, will remove it. This is effected by using a solution of shellac in ammonia as the cement, and allowing sufficient of this to be absorbed into the gelatine film before it is attached to the paper. The result is no longer gelatine, but insoluble gelatine (leather), rendered waterproof by resinous cement, and attached firmly to paper by the same cement.

III.—Applications.

The applications of this process are very numerous. I will at present merely allude to a few of them :—

1. We obtain pictures on glass, in carbon, or other pigment, by simply mounting the exposed tissue on a clean glass plate and developing the picture, merely backing it with another glass plate for transparencies, and with paper or plaster for pictures to be viewed by reflected light. There is no transfer, and no cement. The picture is not inverted, being viewed through the glass.

2. We obtain pictures on opal glass, porcelain, panel, prepared canvas, prepared paper, &c., directly and without transfer; but the pictures are inverted if ordinary negatives be used.

3. We obtain non-reversed pictures on paper, which may be boiled in water and rubbed like linen, by mounting the exposed tissue on a temporary support, such as a plate of metal or glass coated with a fatty body, and, after development, transferring the print to paper by simple contact, by means of the shellac cement.

IV.—Manipulation.

The manipulation is of a very simple character, but more easily shown than explained.[*]

PHOTOGRAPHY IN INDIA.

BY CAPT. E. D. LYON.[†]

I have much pleasure in submitting for your inspection a collection of photographs taken by me in different parts of Southern India, by order of the Government. The whole series consists of about 400 negatives, many of which have never yet been printed. The time occupied in the taking of these was about seven months, during which I travelled nearly 5,000 miles.

To give any idea of the difficulty of locomotion in such a country is hardly possible, except where the railways have here and there been made. The bullock-carts, both for yourself and luggage, are the only means of conveyance. Roads, though nominally existing, and marked on maps as such, are, in very many instances, things of the past, the bridges alone indicating where they ought to be; and the unhappy travellers, boxed up in a coach drawn by bullocks, think themselves lucky if they accomplish two miles an hour; in fact, I have often been twenty-four hours in travelling twenty-five miles, without one spot in which it would be possible to halt, or a tree to shelter one from the blazing sun, the natives at one time lifting the machine over a mud wall three feet high, and at another dragging it through the muck of a rice-field three feet deep. The destruction to every kind of photographic materials under these circumstances I leave you to imagine.

But, distressing as locomotion is in such a country, it is nothing as compared with what one has to undergo when endeavouring to photograph, exposed to the full rays of an Indian sun, as one must necessarily be, for six to seven hours at a time, the ground so hot one can hardly stand on it for the time necessary to expose a plate, the glare so great and the shadows so black, that to get detail seems almost hopeless; and yet, under the circumstances here detailed, one is expected to produce photographs at least equal to those at home, and all the credit one gets is to hear, from the highest to the lowest in the land, the one and the same remark, "Oh, yes! the sun is so bright and the light so good, any one could photograph in India." All I can say is, I only wish they would go and try. I have said enough on this point, and will only add a few words on the photographs.

They are produced by the ordinary wet process, such as you are all acquainted with. But honour to whom honour is due; and I feel bound to bear the very highest testimony to the lenses supplied to me by Mr. Dallmeyer. The one I used first, and with which nearly all the interiors were taken, was his triplet-group lens, for 12 by 10 plates. The photographs speak for themselves so eloquently of its merits, no words are needed from me to bear testimony to its superlative excellence. Then I received the wide-angle rectilinear, and from what I saw of its powers I christened it, the first day I used it, "The Little Wonder," and never, I think, was a name better applied. It certainly has a power of rendering dark shadows, and, notwithstanding the immense angle it embraces, giving marvellous definition to the extreme edges of the plate, in a manner that, I confess, astonished me quite as much as it delighted me.

As to chemicals, Thomas's pyrogallic is deserving of every commendation; it is the only sample which will keep good in India; all others turn black, even during the passage out. As to collodion, I have tried all, but cannot say I am quite satisfied with any. Most of the pictures you see are taken with Mawson's, a few with Huggon's, and a few with Blanchard's; but all have the one fault that only one bottle out of four or five will give an even film, free from reticulation in the heat; and the more you dilute it the worse it gets. But when you do get a good bottle, it can be used almost to the last drop without any dilution.

Correspondence.

WET PHOTOGRAPHY WITH AND WITHOUT A TENT.

Sir,—Having now completed my new tent, and tried it, I forward a few particulars of the size, &c. When closed for travelling it is 22¾ inches wide, 17 inches high, by 7 inches from back to front; when opened it affords working room 22 inches by 18 inches, which is ample for 8½ by 6½ plates. It weighs, when empty, 8 lbs. 2 oz., and when full and containing all requisites for 9-7 by 4½ plates the weight is 16 lbs. 5 oz. It can be erected and fit for use in a couple of minutes, and packed up again in as short a time. Now the dry-plate worker must carry at least four double dark slides, or a plate box with changing bag, or something of that kind; these must weigh 5 or 6 lb., so the wet-plate man has only 10 or 11 lbs. extra to carry when working small plates such as I have named.

I have been much interested in reading the accounts in the News of Mr. Whiting's apparatus, particularly as I have often tried a dipping bath for developing plates, and never succeeded; but, on referring to Mr. Barrett's excellent description of his apparatus and mode of working, I find that he recommends a neutral silver bath, and in this small matter perhaps lies the whole secret. Should I, upon another trial, find that I can use a dipping bath for developing successfully, I anticipate a most happy future for open air operations with a tent. The methods employed by Mr. Barrett and Mr. Whiting are open to one serious objection, the difficulty of coating a plate properly in the open air, for by the sea-side a little wind and dust are constantly on the move more or less, and inland the same, except on rare occasions. It also involves that the camera must be level, and this is not always possible, and in many situations there is room only for the camera; but the inventions are not the less ingenious, if not under all circumstances practical.—Yours truly,

Thos. Gulliver.

May 16th, 1869.

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[*] It was Mr. Johnson's intention to proceed, after reading his paper, with a practical demonstration of the process. In his absence through illness, the paper was read by the Secretary, and the demonstration was promised for the June meeting.—Ed.

[†] Read before the Photographic Society of London, May 10th, 1869.

FIELD WORK WITHOUT A TENT.

Dear Sir,—Whether Mr. Barrett's letter (which appeared in your last number) in reference to my photo-camera-lucida was written in a friendly spirit, or not, I cannot tell; but, as in that letter he endeavours to convey the idea that my plan is defective, inasmuch as that, during the very short time that it takes to insert the blotting-paper pad in the lower end of the protector, the light that did get in would fog the plate; and as many of your readers may be thereby deterred from adopting a thoroughly practical invention, I beg to state that, as the protector is black inside, and the opening at the lower end is only large enough to allow it to slide easily on the outside of the bath, and as it extends to from an inch and a-half to two inches below the plate, the light, if any, that does get in, does no harm, being killed, as it were, by the darkness within.

Years ago, when I first made the protector, thinking that the light would get in and do harm, I placed a valve at its lower end, that would shut when it was removed from a bath, and open when it was put on one, but by an accident I found it was quite safe to dispense with it. When the plate is ready to be taken out, the pad is held in the left hand near to the bath, and the protector is as easily and as quickly placed upon it as it could be upon the adjoining bath, and there is really no danger attending it, and no hurry required.

As to the size of plates that can be worked with my apparatus, I beg to say that it is unlimited. Of course, the bigger the plate the larger the apparatus to carry; but this must be the case with any other plan, and is, therefore, no disparagement. I may state, however, that large plates can be developed better and cleaner with my plan than by the ordinary dark-room or tent method; no stains from the developer going unequally over the plate, and no reduced silver at the lower corners from the dark-slide carrier.

In the number of the News for April 23rd, in your remarks upon development by dipping, you stated, as a disadvantage attendant upon it, that each plate developed in a bath lessened the reducing power of the developer. Now, although this may be true in theory, still I have not found it to be a disadvantage in practice. The large quantity of solution, and the fact that every plate dipped leaves some silver in it, no doubt counteracts it. I have many times developed a dozen and a half of plates in an upright bath, when I have been out for a day, and the last has been as good as the first. I have also gone out again and again with the same solution, and with equally good results.

The solution is cheap, and it may be as well to filter and to strengthen or renew it, after a dozen plates or so; but there really is no need to renew it after every plate, as you hinted might be done.

In regard to the silver bath, the same objection applies, and, I think, with much greater force. It is a much more delicate solution, if I may use the word, than the iron one, and certainly every plate sensitized in it not only robs it of its power, but leaves in it that which is really detrimental, and yet it is tolerated by every photographer in the world. I therefore think that they should not object to a dipping bath for development, on the ground of its losing power from the cause alluded to.

Hoping that you may be able to find a corner in your valuable journal for the above, I beg to subscribe myself yours respectfully, Wm. Whiting.

CRACKED NEGATIVE FILMS.

Sir,—Permit me to make a correction in your report of what I said in the discussion which took place at the meeting of the Photographic Society last Tuesday.

The sentence I refer to, as reported in your Journal, runs thus:—"Cracks in the collodion film had, unfortunately, been occasionally seen ever since the introduction of the collodion process, no matter what collodion or what varnish had been used, without the fault being due to either, but rather to the incompatibility *of the same two samples* when used in conjunction." This last sentence should have been: "but rather to the incompatibility *of some samples** when used in conjunction."

I referred, of course, to the use of a varnish not quite agreeing with the sample of collodion used For example: some collodions are made with pyroxyline very easily acted upon by strong alcohol, almost to solution, whilst other samples would be quite unaffected by such a solvent. It seems to me that a varnish should be made with a spirit having about the same specific gravity as that used in the manufacture of the collodion, supposing the pyroxyline to be of that kind not easily acted upon by alcohol. It is also important that the spirit should be pure, not methylated, for it is well known that the solvent power of methylated spirit is greater on some kinds of pyroxyline than on others. I cannot think that a varnish which possesses a power only just short of acting as a solvent on the body with which it is to be brought into contact is a suitable one to use. Most negative varnishes will bear the addition of a little water, and, where a tendency to solution of the film is shown, this dilution might be advantageously made.

I purposely abstained from taking up the time of the meeting by recapitulating the many little points, attention to which gives the photographer, comparatively, an immunity from the terrible annoyance under discussion, because all these things may be found in any treatise on the subject; moreover, it would have been puerile to have referred to them.

The nature of the surface of the glass itself, alluded to by Mr. Dallmeyer, is deserving of consideration. I have myself drawn attention to this subject at page 65 of my treatise. It may, probably, not be generally known how easily the surface of plate glass becomes disintegrated by the continued and combined action of heat and moisture. The best kind of patent plate glass, if kept in an ordinary box, becomes ruined in India in about twelve months, or even in less time. Messrs. Chance are quite aware of this, and, I believe, are unable, at present, to manufacture a glass that will stand the exposure referred to. Now, as such is the case, how difficult, if not impossible, it must be to thoroughly restore the surface of old glass plates that have been used for negatives, whether varnished or otherwise! Nothing short of re-polishing at the glass works would effectually do this. I know that the very common practice of using up old varnished negative plates is a fertile source of queer stains, quite abnormal. This practice is, perhaps, also objectionable on other grounds, and may prove to be one source of cracking of the negative film.

The subject is important, and might be very easily enlarged upon. I fear, however, that I have already taken up too much of your space; at any rate, I have deviated from the object I first had in addressing you.—Yours, &c.,

May 15*th*, 1869. R. W. Thomas.

Proceedings of Societies.

South London Photographic Society.

The usual monthly meeting was held in the City of London College on the evening of Thursday, the 13th inst., the Rev. F. F. Statham, M.A., F.G.S., in the chair.

The minutes of a former meeting having been read and confirmed, Messrs. Schmerl, F. H. Warlich, and J. D. Newsome, of Batley, were duly elected members of the Society.

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* We are obliged to Mr. Thomas for correcting a printer's error which had escaped our notice.—Ed.

The **Secretary** read a letter from the Corresponding Secretary of the Philadelphia Photographic Society, offering to enter into an exchange of photographs with the members of the South London Society. A committee was appointed to arrange a system of exchange with this and other American Societies, and the Secretary was requested to write to this effect to the Philadelphia Society.

Mr. **Bensa** forwarded to the Society his Photographer's Reference Table, which was examined with interest, and a vote of thanks passed.

The **Chairman** announced that this evening had been devoted to the examination of specimens, and conversation thereon, in place of a paper, and discussion. He now invited members to place before the meeting the examples they had brought with them.

Mr. **Bockett** exhibited a large number of excellent photomicrographs with the aid of an efficient microscope of a simple and economical construction. These were examined with much curiosity and interest.

Mr. **Schmerl**, of the firm of Schmerl and Ellis, exhibited a large number of fine photo-enamels by Herr Greiner, of Apulda. Some of these were on porcelain tablets, some on pipe bowls, some on cups, &c., and were suggestive of the advantages of this method of applying photography as a new branch of art industry.

Mr. **Henderson** exhibited two frames of photographic enamel portraits, all of them very fine, and some of them equalling the finest we have seen by Lafon de Camarsac; indeed, it seemed impossible to desire a higher degree of perfection.

Mr. **Howard** exhibited a large collection of landscape photographs produced by the wet and dry processes, most of them possessing admirable skies. These were examined with much interest, and excited considerable admiration.

Mr. **Blanchard** exhibited some 10 by 8 portraits, in the manner of M. Adam-Salomon, as they were distinguished by exceedingly effective light and shade, and rich depth; but distinct in so far as the proportion of figure and general treatment were different. These received universal admiration, as amongst the finest examples of portraiture which had ever been exhibited.

Mr. **Warlich** exhibited some very fine coloured work in oil and water colours.

Mr. **Hunter** exhibited a fine collection of the prints of the Amateur Photographic Association, and Mr. **Sebastian Davis** exhibited the recent and some former prize pictures of the same Association. All these were examined with interest.

Mr. **Cocking**, Honorary Secretary, exhibited an enlargement produced in crayons from the image thrown on the paper by an enlarging camera, and some very fine large portraits, in which the effect of a print on grey paper with pure white high lights was produced by masking.

Mr. **Wharton Simpson** exhibited some fine examples of Herr Albert's new method of printing; some of M. de Constant's prints on tinted drawing paper, by the shellac and silver process; some American prints, "Aux Deux Crayons;" and a Sarony photo-crayon in which the hatching was attempted on the glass, showing, however, that a superior effect was obtained by the design on the drawing paper.

After a pleasant evening, spent in examining and conversing on the prints, and some votes of thanks, the proceedings terminated.

Rich Mounts and Bad Pictures.—It may be taken as an axiom that "photographers use elaborate cards just in proportion as they do bad pictures." I once heard a commercial gentleman recommending very highly some cards whose backs were resplendent with all the colours of the rainbow. "The advantage," said he, "is this: you place the cards upon your table with the picture side downwards. Any person coming into the room would naturally admire such a card as this, and would take it up and examine it. Turning it over to see if the pattern were as good on the other side, he would see your picture"—which he would admire or not, as the case may be, thought I.—*Nelson K. Cherrill.*

Talk in the Studio.

Sarony's Photo-Crayons.—Amid the controversy which the new style of portraiture has evoked, it has afforded us much satisfaction to find our view of the matter endorsed by receiving from various quarters assurances of the great success which has attended the introduction of the pictures to customers. Our view of the probable stimulus it would afford to business is clearly shared in France, as Mr. Sarony has received from one house alone in Paris orders for 4,000 of the vignetted backs. To enable him to work out the very large business his recent plans have involved more completely and satisfactorily, we understand that Mr. Sarony has taken as a partner Mr. G. Reeves Smith, a gentleman of able and active business habits, and much tact and courtesy. We understand that the new firm, which will now be known as Sarony and Co., intend, at the commencement of next month, to undertake the work of producing photo-crayons for licensees on a large scale, so that professional photographers, who do not wish to spend time and money in arranging to produce the transparencies for themselves, may have all the advantages attending such work. The negatives being sent to Scarborough, finished and framed, photo-crayons will be returned, and a charge made of half the profit. This appears to be a plan well suited to the necessities of many photographers, who may not have the facilities or the time for entering upon a new line of work.

Mr. Blair's Carbon Manual.—We understand that Mr. Blair's little pamphlet will be ready for distribution in a fortnight or three weeks. As we understand that it will only be accessible—at least, at present—to subscribers, we commend all our readers interested in carbon printing to send in subscriptions without delay.

Bristol Photographic Society.—We are requested to remind those interested that the above Society will meet on Thursday next, at half past seven p.m., at the Philosophical Institution, Park Street.

Ghost Photographs.—We referred in our last to the "Spirit-Photograph" imposture having come before the police authorities in New York, the photographer, Mumler, having been charged with fraud. The correspondent of the *Standard* says:—"Mumler has been discharged. In the last stage of the examination Barnum was introduced as a witness against him, in his character of expert in the matter of humbug. Whether this had an effect in Mumler's favour on the mind of the sitting magistrate was not known. The most probable reason for his liberation is, that there was difficulty in proving Mumler's pictures to be fraudulent—in establishing that his spirits were not spirits. The negative is always hard to prove, and, in this instance, it was a photographic negative, which complicated the question."

On the Action of Light upon Sulphide of Carbon.—Many of our readers have had the opportunity of noticing that the bottles, especially if made of white glass, containing sulphide of carbon often become lined, if exposed for any length of time to direct sunlight, with a coating strongly adhering to the glass. M. Loew has experimented on this substance by enclosing the sulphide in sealed glass tubes previously moistened with water, which has the effect of lessening the adhesiveness of the brownish coating. On opening the sealed tubes after a few months' exposure to sunlight, the water was observed to have an acid reaction, due to the formation of some formic acid. The solid substance alluded to is insoluble in alcohol, chloroform, ether, and sulphide of carbon, but soluble in a boiling solution of caustic potassa, becoming, however, at the same time, decomposed. The substance is sesqui-sulphide of carbon, which, on being submitted to distillation, is decomposed, yielding sulphur and carbon. The sulphide of carbon from which this substance is deposited contains sulphur in solution, though perfectly pure previous to exposure to sunlight.—*Chemical News.*

Markings on the Plate.—A correspondent of the *Philadelphia Photographer* says:—"I have been troubled a great deal with irregular markings on the end of the plate first dipped in the bath. The cure for them is to lower the plate very slowly into the bath solution. Why it cures, I do not know; it is enough for me to know that I have found it an unfailing remedy."

"Re-sits" and Babies.—A correspondent of the *Philadelphia Photographer* says:—"I give you my plan to avoid retaking negatives: I tell my customers I do not warrant my pictures to please; I only warrant them good, and to please myself; and when they are not pleased, and my work is all right, I charge fifty cents for a new negative, and, as a result, I do not have a negative to retake more than once in two weeks at least; whereas, before adopting the rule, I think one-third of the ladies would sit over and try a different dress almost as many times as they had different dresses. My plan in getting along with babies is, always to charge fifty cents for my trouble. if I fail to get a picture after trying three times, and any one having common sense will find no fault, but consider it just and proper. I think, after two years' trial of the above rules, it saves a sight of trouble, and is better every way."

Using Glass Baths.—"Photographers who use glass baths will find it a great protection to them if they would place in the bottom of them a layer of pounded glass. If a plate should fall off the dipper, the pounded glass prevents it from striking and breaking the bath. Moreover, the small pieces of film, and other things that sometimes float around in the bath, are caught by the pounded glass, and kept from doing injury to the sensitized plate."—*Philadelphia Photographer.*

To Correspondents.

Gallic Acid.—Ground glass is not desirable as a means of admitting light through a negative for enlargement, unless the sun be shining directly on the negative, in which case it is useful. 2. Wooden trays coated inside with shellac dissolved in wood naphtha for the solutions for enlarged prints.

Young.—We shall keep our readers informed of the progress of the new Fine Arts Copyright Bill.

Finem Respice.—We have no doubt that, after a little practice, you will recover the skill of former years, and, with care and patience, you will find Mr. Gordon's gum-gallic process satisfactory. Mr. Gordon uses a 40-grain nitrate bath, and adds a quarter of a grain of iodide of potassium to each 100 grains of silver used. Do not either neutralize or acidify until you try the bath with a wet plate; if it work well, you need not alter it; if it fog a little, add about 1 drop of nitric acid to 20 ounces of solution; if it still fog or give streaks, neutralize and sun, and then filter, and again acidify. 2. It is well to iodize only the portion of solution required for immediate use, and replenish with the uniodized solution. 3. It is a more definite plan to add the trace of iodide than to immerse a plate, although the latter mode, or the plan you propose, would do. 4. Ammonia-sulphate of iron may be used instead of the ordinary protosulphate, using it about a third stronger; but for gum plates you had better follow Mr. Gordon's recipe. 5. The sample of yellow—or, rather, of orange—glass is very good. If you have any doubt as to holes or chips in the flashing, you can use two thicknesses, or apply besides a coating of Aldis's non-actinic varnish, recently described in our pages. 6. Take a piece of calico and stretch over the frame, attaching it to the edges with tacks, then mount the picture with paste thereon.

James Maycock.—We have no means of ascertaining the actual manufacturer of the paper to which you refer. The samples do not reach us in time for testing. 2. Both the tones are pretty good; we prefer that marked 2 on the back. 3. The plate is held in position at the top, quite detached from the holder or protector, and consequently the solutions touch nothing but the plate. There is no need for the cleaning or delay to which you refer, as the plate-protector is never brought into contact with the solutions. 4. The acetate of morphia process gives excellent results where keeping properties are not required.

C. E. F.—We should scarcely like to rely upon any woven fabric for the dark-room window; but it is possible that two thicknesses of the material enclosed might, with a limited area, answer. We should, however, prefer a double sash or a frame covered with two thicknesses of the non-actinic muslin.

R. S.—As we are not continually trying the samples of collodion of different makers, we cannot speak with certainty of the comparative merits of the productions of the various makers you name. We know that Nos. 2, 4, and 7 are good, and believe, from what we learn, that some of the others, if not all, are good. Of Nos. 1 and 6 we have heard good reports.

W. V. F.—We have found dilute nitric acid answer best for cleaning opal glass, and, if the stains are persistent, covered with the acid and heated with a spirit-lamp until they disappear. 2. By adding about a grain of bromide of cadmium to each ounce of the old collodion you mention, you may probably obtain soft negatives from it.

C. Harris.—We cannot, at present, give any definite information regarding the firm you name, but we have too much reason to fear that it is in difficulties; a circumstance we have serious reason to regret.

J. A. C.—Our absence from town has prevented the possibility of our complying with your request, but we believe that you may rely absolutely upon the dealer you name as a trustworthy and respectable man.

Collodion.—Shellac dissolved in methylated spirit, and coloured with gum dragon, will make a good lacquer for brass-work. The brass must be heated before applying the lacquer. 2. The two collodions you name will probably mix satisfactorily; but we have not tried them. 3. The precipitate is reduced metallic silver.

An Amateur.—Thanks. We shall have pleasure in using the design shortly.

T. G.—The print was for your acceptance. It is printed on albuminized paper, and then enamelled with gelatine and collodion. We shall be glad to hear of your success.

W. F. Morgan.—The negatives arrived smashed into so many pieces that it is difficult to see the exact nature of the defect. So far as we can see, the irregular effect in the sky may be due to the wrinkling of the film during development. We have occasionally got a similar result when the developer has been allowed to remain for some time on the plate without motion. Are either of these causes in operation?

Fair Play.—A statement so seriously affecting another as that you make should be verified by your name, at least, for our satisfaction. It would be obviously unfair to publish such a communication sent to us anonymously. Send us your name and the town to which you refer, and we can then take the proper steps.

Cymbo.—We are glad to have afforded you the satisfaction.

Mr. Whiting's Photo-Camera-Lucida.—We understand that Mr. Whiting's announcement will be made in our business columns when he is prepared to supply the public.

G. Lewis.—Neither of the samples of glass you enclose are of the best kind, or perfectly non-actinic. No. 1 is, however, much the better of the two; No. 2 we should think comparatively useless; is not orange, but a pale brown.

Amateur.—The exhibition, as we understand the matter, will be open to every one. We do not know of any English photographers who contemplate contributing. Possibly the non-arrival of an answer to your question may have arisen from delay in getting translation effected.

Venator.—It is quite unnecessary to use distilled or rain water for the hypo fixing bath; common water will answer every purpose unless it is very impure. We cannot account for your prints so rapidly fading if you take all the precautions you state. Do you invariably use fresh hypo solution? 2. We believe the Autotype Company will supply the materials. You had better try to be present at the next meeting of the Photographic Society, to witness Mr. Johnson's demonstration. 3. We believe that cellodio-chloride prints have a better chance of permanency than albuminized prints. 4. Sulphuric acid or nitric acid may be used.

Answers by Post.—We much regret that we cannot comply with many requests, received every week, desiring us to send answers by post, stamped and addressed envelopes being frequently enclosed to ensure answers. Our regular duties are so numerous and so pressing as to render compliance with such requests absolutely impossible; and we are compelled to answer all questions relating to photographic difficulties in these pages only. We hope our correspondents will see that it is necessity, and no want of courtesy or of disposition to oblige, which compels this course, and renders us unable to send personal replies to letters on photographic questions.

Several Correspondents in our next.

Photographs Registered.

Mr. W. Appleyard, Brighouse, York,
Photograph of Hartishead Church.

Messrs. Graham and Suter, Leamington,
Photographic Group of Officers of the Second Warwickshire Militia.

Mr. A. Winterbon, Southampton,
Photograph of Dr. Joseph Bullar.

THE PHOTOGRAPHIC NEWS.

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RENDERING PHOTOGRAPHS PERMANENT BY PARCHMENTIZING THE PAPER.

In the course of a lecture at the Royal Institution twelve years ago, on the method of producing parchment paper, by the Rev. J. Barlow, he exhibited some photographs which had been printed on paper treated in the manner described, the result being, as it was stated, that it was possible "to obtain beautifully rich tones with a far less expenditure of nitrate of silver than at present." Mr. Crookes, then Editor of the Society's Journal, upon this hint, resolved to try the effect of the parchmentizing treatment upon various photographs selected as examples of different tones of printing, produced on various kinds of paper. The result was one he had certainly not anticipated. "The tint of the picture, even in the most delicate half-tones, remained perfectly intact, while the powerful yet uniform contraction of the paper added considerably to the sharpness; the paper was, besides, suddenly gifted with such great strength, that not only would it bear the roughest handling during the washing operation without even the possibility of tearing it, but at any after time, when finished and mounted, it would bear hard rubbing with soap and water and a wet cloth without the slightest roughening or abrasion of the surface." Besides these physical changes, the surface of plain paper prints assumed a peculiar glossy appearance, giving great richness and finish without vulgar gloss. The question of increased permanency only admitted at the time of conjecture, but Mr. Crookes expressed a conviction that a gain in stability would be obtained. A powerful odour of hydrosulphuric acid was emitted by the prints under treatment, and in the short time which elapsed between the experiments and the report no indication of fading or change was noticed.

This much was the result of experiments published twelve years ago. At the time, we believe, the experiments were repeated by a few persons, but we do not remember any further published records. In a few experiments we made at the time we verified the results described, and found but one disadvantage attending the operation, but in our hands it was a troublesome one: the parchmentized prints, when dried, had a rough, crumpled appearance, and the paper having become horny and harsh, it was exceedingly difficult to remove this crumpled effect without very heavy rolling, an operation which at that time was less common and less convenient than it is in our day, a good rolling-press not being then, as it is now, considered as a necessary adjunct of every photographer's establishment. This difficulty would probably be now of little weight, as, if the prints were mounted before perfect desiccation, and then passed through the rolling-press, all unsightly appearance would be removed.

The twelve years which have elapsed have afforded sufficient time for a tolerably complete test of the value of the operation in conferring permanency, and an examination of the proofs affords the strongest corroboration of the original idea that permanency would be secured by the treatment in question. The prints treated in the original experiments of Mr. Crookes, and some by Mr. Spiller, have been preserved. The mode of testing consisted in dividing the print, and treating one-half with sulphuric acid, whilst the other half was left in its original condition. These two halves were then mounted side by side, and put away for future observation. On examining the prints after the lapse of twelve years the result admits of no doubt. The untreated half exhibits the usual sickly indications of change common to prints of that period, whilst the parchmentized prints present the pristine bloom of a recently produced print, no change of any kind being perceptible in their appearance.

That this is most important there cannot be a question; for whilst we believe that carbon or other similar permanent printing processes will prevail in the photography of the future, yet it is tolerably certain that silver printing processes have a tolerably long tenure of existence before they are entirely superseded. If, then, some improved qualities and increased permanency can be secured by immersion in dilute sulphuric acid, it is, at least, worth further trial. One good result is tolerably certain: the operation will, in some degree, operate as a touchstone. A perfectly fixed and perfectly washed print will undergo no change of colour when treated with dilute sulphuric acid; but if hyposulphite of soda and silver be left in the print it will be decomposed, sulphur liberated, and the effects of sulphur toning will probably be at once exhibited. One thing must, of course, be borne in mind: the operation solely refers to plain paper prints. Albuminized paper prints are not suitable for the treatment in question, as the sulphuric acid partially destroys and seriously discolours the albumen For the benefit of those of our readers who may be desirous of experimenting in this direction, we append the instructions originally given by Mr. Crookes for parchmentizing prints. We may premise, however, that in some recent experiments by Mr. Spiller the use of a weaker acid has been found desirable, as assisting in closing the pores or parchmentizing the paper, and producing less of the crumpling effect to which we have referred. He says an acid of 10 or 12 per cent. improves the appearance of the print, and effectually removes any trace of hyposulphite of soda which may have remained after washing. Mr. Crookes says:—

> Take a good sound stoneware jug, holding about a pint, and stand this in the centre of a large pan. Measure out 8 fluid ounces of sulphuric acid of the above strength (oil of vitriol of commerce will generally be found sufficiently strong to be used), and pour it into the jug; then measure 4 ounces of water, and pour that into the sulphuric acid—not hurriedly, but taking about ten seconds for the

purpose. Stir the mixture now with a glass rod, cover the jug with a plate, and leave it until quite cold. Immediately the water and acid are mixed, great heat is evolved, and the necessity for taking the above precautions will be at once evident, since any breakage of the vessel through the sudden and great heat to which it is subjected will be attended with the most destructive consequences to almost everything that the acid touches.

Have ready three perfectly clean dishes arranged side by side. No. 1 must be of good porcelain, quite dry, and in size about 10 by 12 inches. Nos. 2 and 3 should be very deep, and holding not less than half a gallon each. Into No. 1 pour the mixture of sulphuric acid and water. Nos. 2 and 3 must be filled with pure water, and into the latter a few drops of solution of ammonia must be added.

Now take the photograph (which must be quite dry), and, in the ordinary way, lay the picture side on the acid, taking great care to avoid air-bubbles; then instantly lift it up, and lay the plain side on the liquid. This will not be at all difficult, as the wetted surface curls slightly *inwards*, the acid producing an opposite effect to that of water. Any part which is not covered with liquid is now to be gently pressed under with a glass rod or platinum spatula, and the sheet left immersed in the acid for a space of time varying between a quarter of a minute and two minutes, according to the kind of paper on which the picture has been printed. Canson's thin paper will require about thirty seconds; Canson's thick, one minute; thin papier Saxe, twenty seconds; Whatman's and Turner's, about ten seconds, if the size has been well removed; but if they still remain non-absorbent, two minutes will not be found too long. After the sheet has soaked for the proper time, gently raise one corner out of the acid, and, guarding the thumb and finger from injury with a double fold of blotting-paper, lift it entirely out by means of this corner, and allow it to drain for a few seconds; then, with a quick motion, completely immerse the sheet in dish No. 2, and move it about in all directions, so as to remove the strong acid from the surface as rapidly as possible. Lift it perpendicularly out of the liquid, and plunge it in again two or three times consecutively, and then transfer it to dish No. 3, where allow it to remain until the whole number of sheets are completed, or it becomes inconveniently crowded.

Dish No. 2 must be emptied and refilled with pure water, after about six sheets have been passed through it; and in dish No. 3 a piece of good blue litmus paper should remain, and as soon as this shows the slightest tendency to become reddened, a few drops of ammonia must be added, and the whole mixed well together; for if any, even the slightest trace, of unneutralized acid remain in the paper after coming from this bath, the picture will soon be inevitably destroyed; thus the necessity of keeping the liquid in dish No. 3 alkaline will be evident; at the same time experimentalists must not forget that long soaking in ammonia is prejudicial to the half-tints of the picture, and thus the *excess* of alkali must be but small.

After coming from the ammonia bath, the sheets will want washing two or three times in clean water, and they can then be dried in any convenient way. The paper, when dry, will have an uneven, crumpled appearance, and will require either to be carefully mounted or passed between rollers, to render it smooth again.

THE USE OF INDIA-RUBBER IN PHOTOGRAPHY.

When the common use of india-rubber as a mounting agent was advocated a year or two ago, we expressed a doubt as to whether the advantages promised would counterbalance the probable disadvantages involved in its use. Since then we have given the subject careful attention, and have devoted to it considerable experiment and observation, in order to arrive at a certain conclusion. We have, from time to time, in answer to queries, felt it our duty to warn our readers against relying upon india-rubber as a safe mounting material, and all subsequent experience has confirmed our convictions on the subject.

It is certain, we think, that india-rubber is not a trustworthy material for mounting photographs; and, notwithstanding its convenience as an aid to attaching prints in scrap-books and albums without risk of cockling, and the aid to permanency promised by its advocates in virtue of the waterproof character of the layer of cement, we think it unwise to use this material for mounting photographs intended to last a dozen years. We have prints in our possession which have been mounted with india-rubber something less than two years, which show no signs of deterioration; but we have also some which, in the same period, have curled away from the cards. We cannot find one which has been mounted with this material for a dozen years which has not deteriorated and left the mount, leaving a brown, non-elastic, friable layer on the card. Mr. Spiller—who, as our readers know, has given a good deal of attention to the effect on india-rubber by light and air, which he reported very fully to the Chemical Society a few years ago—recently called our attention to his experiences with india-rubber as a mounting agent, by which our own views are most fully sustained. In every instance in which his prints of some years ago were mounted with india-rubber, the elastic gum was changed into a brown, friable resin, facilitating decay rather than securing permanency. The change was found to be precisely of the same character as that he had formerly found in the thin india-rubber felt used for cartridges at Woolwich. A brief communication on the subject will be found on another page.

Another important question arises in connection with this subject. If india-rubber is a perishable substance for mounting, is it safe as a preliminary coating for dry plates? It must be admitted, we fear, that it is doubtful. But, at the same time, it must be conceded that the conditions under which it is used as a preliminary coating to those which obtain in relation to its use as a mounting material. In the latter case a sensible body of it is used; however little may be used, it is applied in the form of a paste, and an appreciable layer must be present to secure adhesion; and it is, moreover, never protected from atmospheric action. When used as a preliminary coating for plates, the amount used is infinitesimally small, a solution containing one grain to the ounce being generally employed. It is protected from atmospheric action by the film of collodion and the final coating of varnish; and even if it finally change to a friable resin instead of an elastic gum, being on a rigid plate of glass the change would not necessarily be mischievous. Except, therefore, the scarcely appreciable amount of injury which might result from the trace of india-rubber darkening under the action of light, we do not see any reason to anticipate serious results from the use of india-rubber as a preliminary coating to dry-plate negatives.

As a layer forming part of a transferred negative, its disuse has already been recommended by Mr. Woodbury, and it is manifest that any change in a layer of india-rubber occupying such a position might be destructive of the negative. To protect the negative film from the action of the solvents in the coating of leather collodion applied as a means of transferring the negative, and supporting it after a film of india-rubber, seems at first sight the best possible appliance, as it not only so protects the film from the solvent, but gives support and elasticity afterwards. But if, however slowly, the india-rubber be gradually changed from an elastic gum into a brown powder, it is clear that the value of the negative is much impaired, and its safety seriously perilled; and that the risk of such a possibility is sufficient to destroy all confidence in the use of india-rubber in transferring negatives.

EXHIBITION OF PHOTOGRAPHY, NATURE-PRINTING, AND CHROMO-LITHOGRAPHY IN GRONINGEN.

We have received from the Committee of the Photographic Exhibition to be held in the Netherlands the following details, which will interest intending exhibitors. We may remark, that the liberal list of medals, and the facilities offered to English exhibitors for having their contributions forwarded without cost and trouble, afford inducements which will, we hope, be accepted by many of our readers, so that a good and creditable display of English photography may be made.

The Committee for the Exhibition, referring to the articles 5 and 14 of the programme, has the honour to communicate to those interested—

1. That the Jury is composed of the following members:—Mr. F. de Witt, Member of the Town Council, Groningen; Dr. M. Salverda, Professor at the University, Groningen; Dr. L. Ali Cohen, Sanitary Inspector, Groningen; Dr. E. J. Asser,

Attorney, Amsterdam; Dr. P. J. Kaiser, Doctor of Philosophy, Leiden; L. P. Van Der Beek, Captain on the General Staff, the Hague; Julius Schaarwachter, Photographer, Nijmegen.

2. That there will be awarded:—

For the class of *Photography*—Three gold, twelve silver, and ten bronze medals.

For the class of *Nature-printing*—Two gold, five silver, and five bronze medals.

For the class of *Chromo-lithography*—Two gold, eight silver, and five bronze medals.

Whilst, if the Jury should be of opinion that any exhibited objects give inducement to it, more medals and certificates of honourable mention can be awarded.

The Jury is authorised, when in any class fewer objects might be found worthy of a prize than medals have been awarded, to adjudge them in another class.

Among the medals awarded are comprised the following, offered by private persons for peculiar subjects, as:—

A gold medal for the best nature-printing of lycopodiaceae.

A silver medal for the best collection of photographs of objects of botany from nature.

A silver medal for the best collection of photographs of zoological objects from nature; such as different breeds of cattle, horses, dogs, &c.

A silver medal for the best photographs of microscopic objects.

A silver medal for the best photographs of marine views from nature.

A silver medal for unpublished photo-lithographs of known etchings.

Particular attention will be paid, besides, at the adjudgment of prizes, to new inventions, which are improvements in the different branches of art represented at this Exhibition.

3. That no expenses are to be paid by the exhibitors for the space required for their objects.

4. That exhibitors who desire to exhibit their objects framed and glazed can address themselves to Mr. I. H. Kiewiet de Jonge, D. 128, Groningen, who will undertake, for a moderate compensation, to lend the frames.

5. That the adjudged medals will be distributed to those interested, or their representatives, on Tuesday, July 13th, 1869, and that the adjudgment will be published in the Dutch and foreign newspapers.

The Committee, although desirous to receive the demands for admission before the 15th May, as stipulated by Article 6 of the programme, has decided, in favour of those who may be prevented doing so, that they may be sent, at the latest, before the 1st June.

The time fixed, however, before which the articles must be sent, remains irrevocably the 1st July.

The following paragraph especially concerns English exhibitors:—

Mr. A. D. Keulemans, 1, Guildhall Chambers, Basinghall Street, London, E.C., will be kind enough to collect and expedite the objects.

English exhibitors, desirous of profiting by this opportunity, will have the goodness to address themselves to Mr. Keulemans for particulars.

The announcement is signed by the Committee and Mr. J. D. Schutter, Secretary.

INDIA-RUBBER FOR MOUNTING.

BY JOHN SPILLER, F.C.S.

A few days since, in turning over a parcel of photographs, consisting chiefly of stereoscopic slides, mounted by myself for examination in the binocular instrument at a time when the angle of seven degrees was considered to be necessary for the proper representation in relief of statues, and groups of objects placed at no great distance from the camera, I came upon some illustrations which furnish the most indubitable evidence of the failure of india-rubber paste as a mounting material.

The pictures, some of which I have already submitted to the inspection of the Editor, are nearly separated from the cardboard, and the adhesive and elastic qualities of the natural gum have perished by the conversion of the caoutchouc into a yellowish-brown resin, which stains both the photograph and mount, and seems almost, as the Editor remarked, to have conduced to fading, instead of protecting the print from the contact and adverse influence of the atmosphere.

Believing that the yellow stains upon these prints were due to the formation of the caoutchouc resin described by me in a paper read before the Chemical Society in January, 1865, entitled, "On the Oxidation of India-rubber," I washed one of the proofs with alcohol, for the purpose of dissolving out the yellow resin, and found it to answer perfectly to the body containing from 27 to 28 per cent. of oxygen, which seems to be formed as the inevitable consequence of the exposure to the oxidizing influence of the air of thin films of india-rubber—a true hydrocarbon—especially when in the softened condition as left by the evaporation of a solvent, such as benzole or coal-tar naphtha.

No reliance can, therefore, be placed in the use of india-rubber solution for mounting photographs, for *all* the proofs in my possession, treated in this way, show a tendency to become loosened from the card, even in those cases where they are not yet actually detached. I have by me several prints mounted ten and twelve years ago, and there is no exception to the general rule of change under these circumstances. I have, besides, seen failures from the same cause in the portfolios of my friends, who were induced, like myself, to avail themselves of the facilities offered by this otherwise very convenient mounting agent, when its use was first proposed.

It is but right that photographers should be placed in possession of these facts, for it is not long since a proposal was made to employ a coating of india-rubber for stopping the pores of paper prior to the application of albumen in the preparation of a material for use in printing. There is, besides, a suggestion to employ a film of india-rubber for the protection of negatives previous to varnishing.

For myself, I am content to adhere to the use of a mixture of glue and gum arabic for all mounting purposes, as recommended in an earlier communication to your pages. With this communication I enclose a copy of my chemical publication containing the analyses.

May 10th, 1869.

MANIPULATIONS IN PHOTO-CHEMISTRY.

BY JAMES MARTIN.*

The next manipulation needed after that of weighing will most probably be pulverization, or the art of reducing substances to powder. The instruments required are mortars and pestles. These are made of various sizes and substances, according to their intended uses. Those for pounding hard substances which do not act chemically upon metals are made of iron, bell metal, or brass, and are in the shape of an inverted bell; others are made of marble and agate, but, at present, are seldom used, as they are acted upon by acids, and liable to be broken if used for pounding; those made of wedgwood ware are the most generally useful, and, indeed, absolutely necessary in photo-chemistry. It is best to have more than one size; No. 3 and No. 6 will be found very convenient sizes.

Pulverization is effected partly by percussion and partly by grinding. The substance to be powdered is put into the mortar and struck or bruised with the pestle, and the pulverization finished by grinding with a circular motion; but the motion of the pestle ought to vary with the nature of the substance to be powdered: those which are hardened by the stroke of the pestle require to be reduced to powder by bruising or grinding, rather than by striking; those substances which are softened by the heat, occasioned by rubbing, and percussion, require to be pounded very slowly; those which are hard must first be pounded by repeated strokes of the pestle until well bruised, and then powdered by grinding. Care should be taken, in pounding in a wedgwood, marble, agate, or glass mortar, that the pestle does not strike the side of it, otherwise it will most likely be broken.

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* Continued from p. 221.

In powdering precious substances, great loss may arise, unless care is taken, from the fine powder which, from some substances, arises abundantly during the operation, and great inconvenience incurred from the same cause when powdering poisonous or irritating substances, such as corrosive sublimate, cantharides, and some others. In these cases, a cloth or skin should be so arranged over the mouth of the mortar as to prevent the powder from escaping, and yet allow the free action of the pestle. In cases where it will not do injury, a few drops of water may be added. This caution should be particularly borne in mind, otherwise the health of the operator may be greatly injured, particularly should the quantity be large. Bruising or coarsely powdering a substance always aids its solution; this, in chemistry, signifies an intimate union of solid with fluid bodies, so as to form a transparent liquid. Simple solution implies a suspension or dissolving of the substance in the fluid, from which it can be recovered in its previous state by evaporation; as, for instance, nitrate of silver dissolved in water.

In chemical solution, the nature and properties of the substance become altered, and it cannot be recovered in its pristine form except by chemical decomposition; as, for instance, metallic silver dissolved in nitric acid. No photochemical manipulation varies more than this, and the success of very many processes depend upon an accurate knowledge of the proper solvents, the way of applying them, and the degrees of solubility, in such solvent, of the solid under examination. In some cases heat will be required to aid and hasten the solution, as in dissolving gums and resins for making varnishes; in others, frequent shaking or stirring may be needed. Bruised glass is often used to prevent gums from coagulating in a lump, and so preventing the action of the solvent upon them. Great care should be exercised in dissolving substances in volatile and inflammable liquids by heat. Many sad accidents have happened in this way, from either want of knowledge or carelessness. Suppose a composition of shellac, bee's-wax, and turpentine or benzole, is required; the boiling points of these substances vary so considerably that, should they be placed together in an open vessel over a fire, the turpentine or benzole would, in all probability, be evaporated, or on fire, before the shellac had melted; therefore it would be best to proceed as follows:—Procure a ladle, or iron pot, big enough to hold double the quantity of the mixture required; first put in the shellac; when melted, put in the bee's-wax, and stir until melted; take the pot or ladle off the fire, and gradually stir in the turpentine or benzole, which has, in the meantime, been warmed by placing the bottle which contained it in hot water, leaving it uncorked. Should the mixture need further diluting, more turpentine or benzole can be added when cold; but the mixture should never be replaced upon the fire in an open vessel, otherwise an accident may occur through its bursting into flame. It is well to have at hand a wet cloth, and either an old plate, a piece of slate, or iron, which will lie flat and completely cover the ladle. This placed over it will damp down the flame and put it out without danger. Never attempt to put out the flame of a burning liquid by blowing it with the breath, or you will run the imminent risk of scattering it about the place or over your clothes, thus damaging the furniture and risking a loss of life itself.

The composition above forms, with colour added, common sealing-wax, or, with a greater proportion of turpentine or benzole, a good waterproof varnish for wooden tanks or dishes for photographic purposes.

114, *High Street, Ilfracombe.*

THE PHOTOGRAPHIC PLANE-TABLE.

Extract of Report of MM. Regnault, Fizeau, and Abbadie, to the Académie des Sciences, upon the Photographic Plane-table invented by M. A. Chevalier.

When Daguerre first employed the camera for the purpose of fixing images upon a metal plate, Arago at once pointed out the fact that topography might borrow from photography its rapid means of registration. The view taken by this great physicist gave rise to divers projects to bring about a solution of the problem, and five years later, M. Martens showed how it was possible to fix upon the surface of a cylinder a succession of images received through a narrow slit by means of a moveable lens. In this manner half the tour of the horizon only was obtained; but M. Garella, Engineer-in-Chief of Mines, proceeded to perfect the instrument in such a way as to render it possible that the images might be taken upon a plane surface, and that the whole tour of the horizon might be secured. The details of the instrument were exceedingly ingenious; but when it was desired to construct a plan, long calculations and deductions were necessary, causing delay and giving rise to the possibility of errors.

Seventeen years after the invention of Daguerre, A. Chevalier stated, in very precise terms, the problem to be solved, establishing the fact that in order to obtain a plan upon paper, it was necessary to construct, at each station, a special protractor, formed photographically by the whole of the surveying signals, which the instrument registers automatically, according to the angular separations as observed by the eye from the station selected.

This result M. Chevalier obtained by causing a vertical lens to make the tour of the horizon, by means of clockwork mechanism, and thus to secure images of the signals situated around the station. These images are thrown by means of a reflecting prism, in rigid connection with the lens, through a slit placed above a horizontal sensitive plate. The axis of this slit forms part of the moveable vertical plane, which contains at once the optical axis of the lens and the centre around which it moves in azimuth. The slit opens automatically, and without vibration, after the lens and the prism have already acquired a uniform rotatory movement. When the tour of the horizon is finished, the slit closes of itself, and the whole apparatus may be turned horizontally until the needle of a compass attached coincides with the zero upon its disc; then, by opening an aperture specially constructed for the purpose, the light is allowed to trace on the margin of the plate a line indicating on the picture the direction of the magnetic meridian. This precaution serves to give the direction to the negative, and allows of the draughtsman, when constructing his plan, to identify the several combinations of subsequent tours of the horizon.

In this circle of photographed images, all the signals preserve between themselves the true angular separation as seen from the station. In rare cases, where a signal is too high or too low in relation to the instrument, a small lens *à éclimètre*, moveable round a horizontal arm fixed upon the apparatus, allows of recording this signal upon a landmark in the field of the instrument. Finally, a hair line, produced by means of a thread situated at the height of the optical axis, shows all the points in the photographic panorama, in which the height is equal to that of the station whence one operates. The employment of the apparatus requires no other special knowledge than that of photography.

To comprehend the great simplification thus brought about in the art of surveying, let us repeat the details of the methods hitherto used:—

After having, with considerable trouble, directed the optical axis of the telescope of the theodolite separately upon each signal, the figures of the levels are taken down in succession. When the levels are very numerous, several hours are necessary for making one entire tour of the horizon. A protractor is now placed in position, and, after having been noted, is directed in succession to each horizontal angle. These several operations are very long and tedious, and often errors are committed, which are the more difficult to correct the higher they mount up. The ordinary theodolite, or reading theodolite, is only really preferable when it is desired to obtain the most precise results by calculating the construction of each triangle.

On the other hand, the photographic plane-table will complete a tour of the horizon within half an hour, and the number of signals may be multiplied without in any way rendering the task more laborious. By increasing the number of signals there is less risk of error and of subsequent rectification, and much intermediate work and calculation obviated. Less care and skill are required in its employment, and inclemency of weather becomes a matter of little importance.

The Commission cite many instances in which the instrument has been used with advantage; and some cases where errors have been discovered in standard maps by means of its employment. They conclude by stating that after twelve years of incessant study, Chevalier has died at the moment when he hoped to see his invention adopted by learned bodies, and suggest that so novel and ingenious an application should be honoured by the high approbation of the *Academie des Sciences*.

ABNORMAL LIGHT EFFECTS OBSERVED IN POSITIVE PICTURES AROUND DARK OBJECTS.

BY LUDWIG SCHRANK.*

In several of the German and English Journals we have observed, of late, discussions upon a phenomenon which formed the subject of a debate at a meeting of the Vienna Photographic Society in January, 1868. On that occasion M. Edmund Riewel exhibited a photograph taken in the studio of M. J. Hoffmann, depicting a group of two ladies in velvet dresses, and presenting near the darkest parts of the drapery a luminous mark of the most decided character. Everybody was conscious of having noticed something similar to the effect shown at some time or other, but the reasons offered of its appearance differed greatly. Many considered it due to a refraction of the light, or, rather, to some optical cause which was invisible upon the focussing-glass; while others believed that unequal development was the sole reason of the phenomenon.

These luminous margins have been christened "halations" by the English journals, and many have been the reasons assigned for their presence; owing, however, to the confounding of these abnormal effects with similar appearances, several false interpretations have been placed upon them.

The earliest experiments, instituted for the purpose of arriving at a satisfactory explanation of the occurrence of this luminous margin around dark objects, were conducted to ascertain whether the same was not due to reflection exerted from the back of the prepared plate, and for this purpose a piece of white paper was placed in the dark slide during exposure. If this had been the case, however, the luminous border should not have been around the dark objects (as, for instance, the velvet drapery), but should have proceeded from the light background, and have injured the outlines of the dark object; for as it is just those unaltered surfaces of iodide of silver which produce the black patches of velvet not having been acted upon by the light, it is, of course, impossible that reflection could exert any influence whatever.

If this mode of explanation were a reliable one, the light objects (those lighted up in the negative) ought to be represented with a double outline, in the same manner as a double reflection is produced by approaching a candle flame near to a looking glass, the one being a reflection from the polished surface of the glass, and the other from the surface of mercury behind the glass. The thicker the collodion film the more undefined would be the duplicate pictures; but in no way can this explanation be accepted as the cause of the luminous margins, which resemble phosphorescence around the dark objects.

The divergence of the high lights in a positive (or of the blacks in a negative) representing white cuffs, fronts, polished buttons, &c., is a very different phenomenon, and is due partly to the fact of these objects not being in focus, and partly to an unequal precipitation of silver upon those portions of the negative the modelling of which is thus injured.

If, by means of a portrait lens, a photograph of a figure standing in front of some bushes is taken so that the background appears to be a glaring white wall, a picture is obtained of the figure only, as the bushes behind, having a shorter focus, are rendered on the ground glass as luminous discs or bundles of rays. If a second picture is afterwards taken, and the camera shortened, so that the objects in the distance may be depicted, then a correct rendering of the bushes is obtained. In this same way behave all bright or strongly-illuminated objects in a picture, such as metal cups, swords, bright surfaces of ornaments, &c.; and appearances of this kind may in many cases be regarded as the most simple form of optical halation. The phenomenon is, however, as before stated, in no way connected with the subject of this present memoir.

One explanation of the luminous margin which we have heard mentioned is worthy of citation—viz., that of the refraction of light, by which means coloured rays or fringes are produced. The blue ray is in this manner said to come into action, and to produce a line encircling the dark objects; in Daguerreotype plates an effect of this kind has, it is said, been remarked. Against this theory must be advanced the fact that refracted light is in no way present, for, in the first place, there are necessary, in order to produce refraction, two sharp angles, which must be placed very near to one another. Where are they here? The one angle that is present is far from being sharp; but even if it were, it would be incapable of producing refracted light alone. Secondly, in refracted light, several coloured rays are formed, of which no trace is present; for if they were, the oft-recurring blue and violet rays would exert a chemical action, as also would the central white rays, and the result upon the negative would be the production of broad dark bands interspersed with narrow white lines, or the reverse, upon the positive. The phenomenon in question is not, therefore, the result of refracted light.

By employing certain chemicals it is scarcely possible, even with the best will, to produce the effect, whereas with others it may be obtained when required. This fact is unfavourable to the explanation of its occurrence from optical causes, and we have to consider, therefore, those theories which ascribe its creation to chemical grounds. M. Franz Fink, who has often observed the phenomenon during the reproduction of engravings, has given the subject serious consideration, and has communicated his conclusions to us in a letter. In the first place, he states that between dark objects there are formed, on development, light surfaces very much out of proportion; and he mentions the following circumstances which occurred some years ago:—In taking successively the portraits of two ladies, the one attired in a light lace dress, and the other wearing a velvet mantle, the same background appeared of a dark colour in the first, and exceedingly light in the second, although no alteration had been made in the lighting of the two pictures. In another instance, when a group of clergymen, with black clothing, was photographed, it was found that the sombre garments were surrounded not only with luminous borders, but with a wide-spreading halo proceeding from the dark portions of the picture.

On these facts M. Fink makes the following remarks:—

A picture becomes perfectly developed when the nitrate of silver upon the plate has been reduced to metallic silver by means of the sulphate of iron developer, and when the particles of silver have attached themselves to those portions of the plate reduced by the action of the light. The picture, therefore, is made to appear by reason of a power which attracts the suspended molecules of metal to the surfaces acted upon by light. The greater the surface of the negative acted upon by light, the more the precipitated molecules are distributed over the plate; and, on the other hand, where but few lights exist (in the positive), the concentration of the silver particles at these points will be greater. For this reason it is that hands which rest upon an absolutely dark ground appear intensified out of all proportion, and thus lose all appearance of modelling. The silver molecules are likewise strongly deposited at those portions where iodide or subiodide of silver first attracts them; and in this manner the luminous band is caused which is so often observed at the margin of reproductions of black velvet drapery.

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* *Photographische Correspondenz.*

In this explanation great stress is rightly laid upon the influence of the superfluous nitrate of silver upon the plate.

From the valuable researches of Dr. W. Reissig we have already learnt that, in the wet process, a chemical reaction really takes place, that the iodide of silver is converted by the action of light into subiodide, and the free iodine given off transforms a further quantity of the nitrate of silver into iodide and iodate of silver; and, further, that the presence of nitric acid liberated by this metamorphosis can be demonstrated by the fact that an acid reaction is obtainable at those portions of the negative acted upon by light. The concentration of the nitrate of silver upon the plate, after exposure, is very unequal, and its reaction more or less acid.

While, therefore, on those parts of the negative which are not affected by light, an undiminished quantity of nitrate of silver is present, the latter is in part consumed, through chemical agency, by those portions of the surface the most acted upon, and in this fact we may see something to help us with the solution of the question of solarization, and the reason of its occurrence. We have enjoyed frequent opportunities of remarking, during the reproduction of engravings, that a portion of white ground, where there was a large surface of it, sometimes became perfectly solarized, and, notwithstanding all further manipulation, was incapable of assuming greater vigour: while another portion, of white ground lying between dark lines, allowed of a thicker covering, which gradually increased the nearer the strokes were together, and the more free nitrate of silver there was on those parts.

All these results are in harmony with the conclusion that such precipitates which are formed in opposition to the action of light upon the negative, and which produce upon the positive a luminous line encircling the dark objects, are the result of unequal development. This decision we should have had some hesitation in pronouncing, had not the results of certain experiments, undertaken in conjunction with the well-known photographer, M. Josef Hoffmann, proved to us the fact very conclusively that the luminous band is always formed in the direction taken by the developer in flowing off the plate, or, rather in that direction where the solution passes from an indifferent portion of the negative to a strongly-lighted part. A velvet dress was photographed several times successively, and the developer poured on from the left, and allowed to flow off at the right. The precipitate (the luminous band in the positive) was perceptible on the right edge of the velvet drapery, while on the left not the slightest trace of the line was visible. On repeating the experiment, and pouring the developer in a diagonal manner over the plate, the line was found to become apparent in the same way, and from the opposite side to that on which the developer was applied. We have obtained a series of pictures showing the light band sometimes on the right side, and sometimes on the left, all of which were produced without in any way altering the position of the camera, the method of lighting, or the disposal of the velvet drapery. The shorter the exposure the less detail was there perceptible in the velvet, but the more defined was the band of light, which became apparent as soon as the picture was perfectly developed.

Many operators incline the plate backwards and forwards during development, so that the solution flows continually over the negative. In such cases the precipitate will be perceptible all round the dark image, as the molecules contained in the superfluous liquid on the plate, having been endowed with a tendency to become precipitated by the addition of the reducing agent, pass over surfaces indifferent to them to those portions where they are attracted, and where, consequently, a rapid precipitation occurs; and the greater the deposit of metallic molecules the stronger is the attraction exerted upon other particles of silver still in suspension.

In a negative of this kind it is possible to perceive a distincly perceptible relief on examination with the naked eye.

It will, we fear, be a somewhat difficult problem to discover a method of preventing this false luminous effect.

PHOTOGRAPHIC EXPERIMENTS.

BY H. J. NEWTON.*

Acetate of Morphia—Coffee—The Tea Process—Gum Process—River Water—Developers.

About a year since, the use of the acetate of morphia was introduced as a preservative, but it proved to be only a sensitizer, without any of the qualities requisite for a preservative. Plates prepared with it were very nearly as sensitive as wet ones, but they kept no longer, if they did as long, had nothing been done to them but simply washed. I tried it also on paper for paper negatives with the same results. The idea suggested itself to me, that by combining the acetate of morphia with tannin, I might retain the sensitive qualities of the morphia and the keeping qualities of the tannin. I made a few plates and kept them several weeks; they showed no signs of change, and were as sensitive as those prepared with morphia only, and I exhibited some negatives made on those plates to this Society, which were exposed thirty seconds, according to my recollection. I found, however, in a short time, that there was a lack of harmony in the solution; it had undergone a change which rendered it unfit for use as a preservative. I then made a compound of opium, sugar of milk, and tannin, calculating to get the morphia in the opium in a form that would not be as susceptible to change. After a few trials I found that the following proportions answered my purpose, not only making a very clear and brilliant solution, but one that will keep indefinitely. I have some now on hand which has been made nearly eight months, and there has been no perceptible change. I use—

Hot water	6 ounces
Finely pulverized sugar of milk	¼ ounce
Tannin	40 grains
Tincture of opium	½ drachm

Put together in the order here given. The sugar of milk dissolves very slowly unless pulverized, and hot water be used. The addition of the opium causes a precipitate in the solution, and it should stand at least twenty or thirty minutes before it is filtered. I prefer sugar of milk to any other saccharine substance, for the reason that, unlike all others, it is not liable to alcoholic fermentation, which always precedes putrescence, or the generation of putric acid in saccharine solutions. With plates prepared with this preservative I have made negatives in the month of June, with 4½-inch focus lenses, ¼-inch diaphragm, in five and six seconds, with the alkaline developer, which was quite as quick as I could make them with wet plates.

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* Continued from p. 225.

I also prepared some plates with a modified coffee process, the only material difference being the substitution of sugar of milk, 20 grains to the ounce, for the loaf sugar usually described. This solution keeps, and can be used for months without exhibiting any symptoms of change. The sugar of milk forms a very hard and dry varnish on the surface of the sensitized film, and another office which it appears to perform is to render the negative soft and harmonious, presenting violent contrast. That the sugar of milk has this tendency I proved by making some dry plates preserved with sugar of milk alone. Coffee plates prepared by this formula are very sensitive, but not quite as sensitive as those by the preceding process. They keep, however, equally well, and, in that respect, as also in quality of the negative, are all that can be reasonably desired; it is simple and efficient. I have succeeded in perfecting a tea process which is reliable, and in most respects produces results similar to the coffee. I experimented with several examples of Oolong tea, with different results in almost every instance. I then procured some Japanese tea, and the plates resulting from its use were very fine. I have since experimented with different samples, and the results have been uniformly the same. I make a strong tea, using a large table-spoonful, which I put into a bowl and pour on eight or ten ounces of boiling water, then cover it over, and keep it hot for about an hour; then make.

I have succeeded in perfecting a tea process which is reliable, and, in most respects, produces results similar to the coffee. I experimented with several samples of Oolong tea, with different results in almost every instance. I then procured some Japanese tea, and the plates resulting from its use were very fine. I have since experimented with different samples, and the results have been uniformly the same. I make a strong tea, using a large tablespoonful, which I put into a bowl, and pour on 8 or 10 ounces of boiling water, then cover it over and keep it hot for about an hour; then make it up to 10 or 12 ounces; add, while hot, 15 to 20 grains to the ounce of finely pulverized sugar of milk, filter, and, as soon as cool, it is ready for use. I exhibited some plates preserved with this process to the members of the Photographic Society, at one of our meetings last fall, at which Mr. Rockwood was present. He stated that he had used tea for preserving dry plates, and at times produced very fine results; but he had used Oolong tea, and he often found his plates bad where there had been no change except in the tea. If I recollect right, he stated that he published some of his experiments, but, as far as I was concerned, I had no recollection of ever seeing any published process for using tea for a preservative. I have used, in experimenting, loaf-sugar and also rock-candy in these solutions, but prefer, and would recommend, sugar of milk. I made a very sensitive plate by adding a grain and a half to the ounce of acetate of morphia to my tea solution; it worked in one-fourth of the time. Whether they will keep I am unable to say. I have one, however, which is several months old, that will test that point when used. There was one drawback, however, to its adoption: the same difficulty presented itself that appeared in the tannin into which I introduced acetate of morphia; the tea soon became turbid and unfit for use, except, perhaps, as an anodyne. Whether the morphia could not be introduced into these other solutions, in the same way adopted with the tannin, with the same or still more beneficial results, I have not yet had an opportunity to demonstrate.

Since the publication, in the *Philadelphia Photographer*, of Mr. Carey Lea's modified Gordon's gum process, where he claims to have produced dry plates, with his bromide of silver collodion, as sensitive as wet ones, I have applied his gum formula to dry plates made in the ordinary way; the only change from Gordon's is the substitution of 12 grains to the ounce of sugar instead of 5, with the addition of carbolic acid to preserve it. In my experiments last summer with Gordon's process I used 2 drops of the solution of carbolic acid to 5 ounces of the gum solution, to prevent its changing. With this new gum formula I have produced very sensitive plates, requiring from thirty to forty-five seconds' exposure with an iron developer; according to my recollection, that was the time I found necessary for the old formula. Those experiments, however, were made in midsummer, which would show increased sensitiveness by the new formula of at least one-third. I have made very beautiful dry plates, about one-quarter more sensitive than the tannin plate, with a strong tea made with white oak bark. I have also used, as a preservative, bisulphate of quinine, Peruvian bark, quassia, rhubarb root, shumac leaves, with varying results. It had become quite a common remark, that it was more difficult to find things which would not preserve dry plates than to find things which would. I have experienced no difficulty of that kind.

The effect of Croton water on the sensitive film may be of interest to those New Yorkers who are trying to make dry plates. There are three months in the year in which it can be used without any injurious results, from the first of January to the first of April, and, if the season is cold and backward, to the first of May. As soon, however, as the weather becomes sufficiently warm to cause decomposition of vegetable matter to commence, you will, if you observe closely, notice a change in the sensitiveness of your plate, which cannot be attributed altogether to the change in the season; and this goes gradually on until something appears which will strongly remind you of fogging, and yet you will be hardly able to define it as such, the sensitiveness still increasing as this tendency to fog increases. This went on with my experiments last summer until the middle of June, when the fog became decided, and before the first of July it had become a dirty veil. The negatives produced before the middle of June were good printing negatives, notwithstanding the tendency to fog. After this time, until cold weather has prevented decomposition, and the old stock of water on hand has run off and been replaced by that which contains comparatively no organic matter, Croton water is worthless for washing dry plates—for the first or second washing, at least—from May to January.

I mentioned to Mr. H. T. Anthony the facts here stated, knowing that he had had much experience with dry plates. He stated that his experience had been similar, and that he attributed the effect observed to animal matter more than to vegetable. He stated that, in the month of June, the Croton water became saturated with fish spawn to such a degree that it clogged the sieves in some places, so that it became necessary to remove it once in twenty-four hours. It would appear from this that a certain quantity of animal or organic matter in the water will give increased sensitiveness to the film, and it becomes a delicate question to determine just the kind and quantity to a given amount of pure water, to arrive at the extreme point of sensitiveness without fogging. All who have ever produced dry plates agree that one of the most important parts of the process is the washings, and that the employment of pure water for the first washing is absolutely necessary. I obtain the water which I use by melting ice; it can always be depended upon, whereas distilled water, usually obtained at the druggist's, frequently contains impurities which render it unfit for washing a sensitized collodion film.

I have experimented much with different developers, and have been thoroughly converted to the doctrine of those advocating strong developers. I have always found that a developer at least twice as strong as usually recommended, used with not more than one-half the nitrate of silver commonly used, produces much finer results, besides lessening the time of exposure one-half. Negatives developed with a strong developer and the smallest trace of silver are always soft and full of detail. For a stereoscopic negative 2 drops of a 10-grain solution of nitrate of silver is sufficient.

I have succeeded in compounding an iron developer which works well, and the exposure of the plate is reduced about to the same time required when the alkaline developer is used, and the results are as good in every respect; it has the advantage of being much more simple. It is prepared as follows:—

Gelatine	20 grains
Double sulphate of iron and ammonia	80 „
Sulphate of iron	80 „

Soak the gelatine in cold water fifteen minutes, then put the above together in a bowl with the gelatine, and pour on boiling water 10 ounces. When the gelatine and iron have dissolved, add 10 drops of concentrated ammonia and shake thoroughly; then add sufficient glacial acetic acid to dissolve the precipitate, which will be about 1 drachm. then add 20 grains of tartaric acid. This developer works the best after it is two weeks old. For a plain pyro acid developer, use 8 or 10 grains to the ounce of water, and 4 or 5 grains to the ounce of citric acid. I have, however, used a developer made as follows, which is very energetic, and produces beautiful wine-coloured negatives with very short exposure:—

Hot water	5 ounces
Gallic acid	30 grains
Pyrogallic acid...	30 „
Citric acid	30 „
Glacial acetic acid	30 drops
Saturated solution of acetate of lead ...	10 „

The glacial acetic acid dissolves the precipitate formed by the addition of the acetate of lead.* Unless hot water is used, the gallic acid will dissolve very slowly, as that amount is a saturated solution in cold water.

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A SIMPLE DEVELOPING STAND.

In cases where long development is necessary, or in any case where the solution is required to remain long upon the plate, a levelling or developing stand is indispensable. The following is a description of one, which almost any operator can make for himself:—

Get a piece of any hard wood about one-quarter of an inch thick, and having cut two discs, about two inches in diameter, out of it, bore a hole about one inch in diameter through the centre of each; then take a piece of vulcanized india-rubber, about two and one-half inches square, and one-sixteenth thick (which can be procured at any dealer's in that article for a few cents), and stretch it tightly over the surface of one of the discs, keeping it in that position by tying a piece of string round the edge; then place the other disc upon it, on the rubber side, and fasten the two together by means of three or more small screws. The superfluous rubber may then be cut away, as the binding of the screws will be found amply sufficient to keep the remainder in position. Now procure three pieces of stout wire, and, having bored three holes at equal distances, and rather smaller than the wire near the edge of one side of the compound disc, insert the wires so as to turn up, which, by-the-by, should be about five inches long. Next take a piece of brass wire seven inches long, and about one-eighth of an inch diameter, and fasten to one end a small disc of wood into which three other pieces of wire must be inserted in such a manner as to form an inverted tripod upon which to rest the negative; now take a buckshot, or small rifle ball, and having bored a hole of such a size as to fit tightly on the brass wire through its centre, push it up the wire to within one inch of the disc supporting the tripod. To complete the stand, it is only necessary to make a very small puncture in the centre of the rubber disc; push the brass wire through until stopped by the buckshot coming in contact with the rubber, and attach a leaden weight to the lower end; this weight should, of course, be sufficient to keep the wire in a vertical position. The wires forming the inverted tripod must, of course, be cut so that the negative will rest in a perfectly horizontal position, and when this is done the stand will be found to be thoroughly self-adjusting, and, no matter what the irregularity of the surface upon which it is placed may be, will always keep the negative perfectly level.—*Humphrey's Journal.*

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THE ALKALINE BICHROMATES: THEIR SOLUBILITY, DENSITY OF THEIR SOLUTIONS, AND MEANS OF DISTINGUISHING THEM.

BY M. A. DAVANNE.*

On account of the importance of alkaline bichromate processes, and in order somewhat to facilitate the use of these agents, I have thought it desirable to do with them as has already been done with regard to the principal products used in photography.

Density.—I have prepared tables showing the density of the bichromates of potash and of ammonia usually sold in the trade at a mean temperature of 15° C. (59° F.), so that whatever solution be given, by means of the hydrometer, or Beaume's areometer, the value of the solution may be immediately ascertained.

The table of density, for the one or the other bichromate, is formed into three columns. The first column indicates the quantity of bichromate dissolved in 100 parts of water at the above temperature. I have not gone beyond 10 per cent., the solutions never being employed in a more concentrated condition.

The second column indicates the degree marked by these solutions on the hydrometer. When the density of the liquid is shown on the tube of the instrument, it is only necessary to read the same and see upon the table at what point this figure corresponds with the first column, which will show the value of the solution.

The third column is intended for persons who may not have, or cannot procure, an hydrometer, but who have a Beaume's areometer. It indicates the points of correspondence between the two instruments. I should mention that the areometer is often too short in the stem for the number of degrees inscribed; and then it lacks the sensitiveness and precision necessary for the special case we have in view.

TABLE of Densities for the Solutions of Bichromate of Potash and Bichromate of Ammonia.

Bichromate of Potash.			Bichromate of Ammonia.		
In 100 Water.	Density.	Degrees Baume.	In 100 Water.	Density.	Degrees Baume.
1	1008	1·2	1	1006	0·9
1·5	1012	1·8	1·5	1008	1·2
2	1016	2·4	2	1010·5	1·6
2·5	1019·5	2·9	2·5	1013	1·9
3	1022·5	3·3	3	1015	2·2
3·5	1025·5	3·7	3·5	1017·5	2·5
4	1028	4	4	1020	3
4·5	1030	4·3	4·5	1023	3·3
5	1032·5	4·6	5	1026	3·7
6	1038·5	5·5	6	1030	4·4
7	1045	6·4	7	1035	5
8	1051	7·2	8	1040	5·8
9	1057	8	9	1045	6·4
10	1063	8·8	10	1050	7·1

Solubility.—The solubility of the bichromate of potash is that of 10 parts in a 100 of water at the temperature of 19° C., and 90 parts to one 100 of water at boiling-heat. That of the bichromate of ammonia is 31 parts to one 100 of water at the temperature of 15°, taking as the base of the experiment a hot supersaturated solution, cooled for twenty-four hours. At boiling heat the solubility is much more considerable; and at the first glance it would be supposed that the bichromate of ammonia, like the nitrate of silver, became dissolved in any proportion. It happens, however, that beyond a certain stage the crystals do not dissolve even in boiling water; the point of saturation is then from 135 to 140 parts of bichromate of ammonia in 100 parts of water.

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* The addition of acetate of lead to a gallic acid developer to increase its developing power should be credited to Mr. Carey Lea.

* Read before the French Photographic Society.

There remained another indication to be given. Although the bichromates of potash and ammonia are sensibly different from each other as to colour and general appearance (the former being of a more decidedly clear orange tint than the latter, the colour of which approaches rather to brown), it might, nevertheless, be possible that the one should be mistaken for the other. In order to distinguish them, it is only necessary to expose them to the action of heat. The bichromate of potash *fuses* at a temperature below a red heat, and does not decompose except at an intense heat, whilst the bichromate of ammonia presents the peculiar phenomenon of taking fire and continuing to burn with deflagration, leaving a residue of "sesquioxide of chromium," which presents the appearance of green tea. This residue treated with water will not give it any colouring if the bichromate of ammonia be chemically pure; but it generally gives a slightly yellow liquid, which becomes a bright yellow immediately that any appreciable quantity of bichromate of potash is present.

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Recent Patents.

IMPROVEMENTS IN FINISHING PICTURES.

BY A. L. HARDINGE.

A patent was recently granted in America for the improvement described in the following specification:—

This invention consists in the employment, in combination with the surfaces of photographic prints, lithographic prints, woodcut prints, engravings, and all kinds of pictures, whether upon paper or other material, of a translucent sheet or film, such as wax, upon which film the inks or pigments used in colouring or finishing the picture are laid. In carrying out my invention I take any ordinary print or picture—as, for example, a photographic print—and upon the face thereof I place a sheet of ordinary white wax, sufficiently thin to be so translucent that, when the wax is in close contact with the picture, the principal outlines thereof can be discerned through the wax. I then carefully press the wax film into close contact with the surface of the picture, either by hard pressure or by means of a roller, or by passing the picture through a roller press or other suitable press. In order to apply the necessary pressure I cover the surface of the wax with fine paper. The application of suitable pressure serves to harden and condense the wax, making an excellent surface for the reception of inks and colours.

The translucent film of wax thus applied will adhere very closely to the surface of the picture, which is then to be finished up by laying upon the film any suitable inks or colours that may be desired for the finishing of the picture, such as oil colours, water colours, India ink, &c.

One of the peculiar advantages of my improvement is that the harsher lines and defects of the picture are more or less covered or softened, while the general effects of the lights and shades are blended and improved. This renders the use of my invention specially advantageous in connection with miniature colouring, as the skilled artist is enabled to preserve completely the original likeness, and yet, with a comparatively small expenditure of time, to produce the most charming and exquisite effects, by stippling and colouring.

The facility with which the background of the picture may be altered, lightened, when too dark, by the application of white colours, or darkened with dark colours when too light, or otherwise artistically changed, will be obvious. Alterations and corrections in the picture may also be readily effected. In case of accidental injury to the surface of the picture, it may be easily repaired and preserved. The border of the translucent film may be embossed with any suitable ornamental composition.

In other examples, where the picture consists of a profile or other naked figure, the semi-translucent material, after being applied upon the surface of the picture, may be traced with a needle or pointed instrument around the form of the profile, and all of the film except that directly upon the profile may be removed, and the edges of the film then levelled down to the background. In this way the film-covered portion of the picture, when coloured up and finished, will appear to stand out in relief, forming a medallion picture of very beautiful appearance.

In the general use of my improvement the artist is enabled to produce accurate, lifelike colours and effects with a facility which results from no other process with which I am acquainted.

The use of the film herein described serves also to prevent the original picture from fading, and to preserve it from injury, from moisture, and from atmospheric changes.

IMPROVEMENTS IN MOUNTING PHOTOGRAPHS AND PICTURES.

BY F. M. B. BERTRAM.

This invention consists in a cheap and ornamental method of mounting pictures. It is described in the specification as follows:—

This invention relates to the mounting of photographic and other pictures, also printed, embossed, and woven patterns and trade advertisements, in a compact, economical, and sightly manner; the object to be attained with respect to the application of the invention to patterns and advertisements being that the article produced to contain the same shall, while it admits of being freely distributed among prospective customers, have an attractive appearance sufficient to excite a careful examination, and be suitable for admission to the pocket; but in the mounting of articles for sale (as photographs) a more costly manufacture of mount may be adopted. To this end a box (say) of paper (or it may be of metal) is formed in imitation of a medallion, with a device stamped upon its outer face. The depth of this box will represent the thickness of the medallion, and for a cover a plate or disc is provided, which carries the obverse of the medallion stamped upon it, and is fitted to sink into the box. The patterns or pictures are mounted upon a band or strip of paper, paper cloth, or other suitable substance, which is folded forwards and backwards, so as to produce a pile that will admit of being enclosed in the box or hollow medallion; when thus folded, a stamp or cutter is applied to the pile, so as to cut off the angles and round the pile, leaving, however, enough of the folds to maintain the connection of the discs thus formed. This band is to receive the devices of whatever kind it is intended to mount, and the ends of the band are connected the one to the bottom and the other to the cover of the box. The box, if made of paper, may be covered with foil or metallic paper, which, being impressed by dies forming the counterparts of the faces of any prize or other medal or coin, will give, at a small cost, a fair representation of such original. The medallion thus produced will, when opened by the curious enquirer, present to view the folded band, which, on being drawn out to its full length, will exhibit the devices contained thereon, whether pictures, advertisements, or patterns. It is not intended to limit the application of the invention to any particular form or character of enclosing case or box, as it will be obvious that hollow imitations of other articles than medallions and coins will serve the purpose of the present invention.

PROTECTING THE SURFACE OF PHOTOGRAPHS.

BY F. W. HART.

The following improvement consists in the use of a varnish of albumen, afterwards coagulated by steam or other agency. It is specified as follows:—

This invention consists in protecting the surfaces of lithographs, photo-lithographic prints, placards, plans, maps, and printed surfaces of a like nature, in an economical and effectual manner by means of a coating of albumen applied thereto. Hitherto, such surfaces, when desirable, have been varnished or protected by spirit varnishes or gelatine, but such processes have been subject to several objections; for instance, in the application of spirit varnishes it is necessary that the paper on which the prints or designs are produced or impressed should first be especially non-absorbent to the spirit, and, in addition to this, the application of a spirituous solution or fluid is prejudicial to the health of the operators, and is likewise dangerous to property, owing to its inflammable nature. Again, in the application of gelatine, a surface of metal or glass is first coated therewith, and the gelatine is then transferred to the surface to be coated; in this state it is subject to injury by moisture, and, in order to render it permanent, must be subjected to chemical treatment. In both the processes above referred to much time is occupied, and considerable expense necessarily incurred.

In carrying the present invention into effect, I prefer that the prints or designs should be on a well-sized, hard paper; but when this is not the case, and the paper is unsized or insufficiently sized, I lay the prints or designs down on a level surface, and sponge both sides thereof with a warm solution of starch or other sizing material, and then hang them up to dry; if calendered or rolled after this treatment, the paper is then in the condition preferred to be used. I then prepare a sufficient quantity of albumen by taking the whites of eggs and breaking up the mass into an uniform liquid by a beating machine or whisk, as is well known to persons conversant with the preparation of photographic albuminized paper; I then coat the printed surface of the paper (the same having been previously dried) with the albumen thus prepared. It is desirable to introduce into the albumen, during the operation of breaking or whisking, matter of a deliquescent nature, such as chloride of calcium or nitrate of ammonium; and I find that about one per cent. of such substance is sufficient for the purpose of preventing the albumen on the paper becoming thoroughly desiccated, as in this state it is conveniently rendered insoluble. The paper having become dry, in the ordinary sense of the term, I proceed to render the surface coating insoluble (in the same sense as varnishes are insoluble) by means of steam or boiling water. The like result may be obtained by the use of well-known chemical solutions and hygroscopic gases possessing the property of rendering albumen insoluble; but I prefer the use of steam, as being cheaper.

The following is a convenient mode of carrying out this portion of the process:—The coated sheets of paper are suspended from rods or cords in a steam chest properly protected to avoid loss of heat by radiation. A small amount of aqueous vapour is allowed to pass from the steam generator or boiler through the steam chest; and when the latter is filled the steam is turned on, and the temperature raised to at least from 170° to 190° Fah. as rapidly as possible. The sheets of paper, with their surfaces thus protected, are then removed, and at once piled face downwards, the result of the treatment above described being that the prints or designs are covered with a most efficient protective coating, whilst the prints or designs have a depth and tone imparted to them which have been unattainable by the methods hitherto adopted, from the fact that the black or deep shadows have a greater amount of surface given them than the high lights.

Having thus declared and ascertained the nature of my said invention, and the manner in which it is to be performed, I would observe, in conclusion, that what I consider novel and original, and therefore claim as constituting the invention secured to me by the said hereinbefore in part recited letters patent, is the application of albumen to the surfaces of lithographs, photo-lithographs, and like printed surfaces, as and for the purposes hereinbefore described and set forth.

IMPROVED PHOTOGRAPHIC FRAMES.

BY G. P. BERGEN AND C. T. BAINBRIDGE.

This patent consists in an improved mode of producing frames for photographs. It is described as follows:—

The invention consists, firstly, in a card or card frame of paper, or other material, having an opening through it for exhibition of the picture, and framed with an embossed border round the opening on the front side or face of the card or frame.

The invention also consists in a card or frame of the character described, with a cavity in its rear for reception of the picture.

Likewise the invention covers the production of a card or frame by simultaneously punching the paper, or other material of which it is composed, to form the opening for exhibition of the picture, and embossing the border of the opening.

And the invention further consists in a combination, with automatic feeding devices for feeding a continuous strip of paper or other materials, of mechanism for punching in regular order a series of openings in the same, and embossing the margins or edges of said openings, including, also, means for simultaneously cutting the strip into cards or frames of the required length or size.

Correspondence.

NON-ACTINIC LIGHT FOR OPERATING ROOMS.

Sir,—In the Photographic News of May 7th is an article, which I have perused with much interest, on "Yellow Light for the Studio." The subject being one to which I have for several years given some attention, perhaps you will kindly allow me space for a few remarks thereon.

I am glad to observe that you do not speak of the "dark room," for one cannot help calling to mind the veritable "dark rooms" of former days, into which the followers of the black art were wont to vanish from the sight of their wondering sitters, and there perform those magical incantations by which the anxiously expected portrait should presently be made to appear. These deeds of darkness are now, happily, things of the past, and the apartment in which these important operations are carried on is, or may be, as well lighted as any other. I feel convinced that the subject is one which merits particular attention, and am glad to see that you recommend the testing of the yellow light by exposing a sensitive film for a certain time before it. I feel the more interested in this point from the fact that, some four years ago, I suggested the same method as the only reliable means of ascertaining the quality of the medium used; and I remember that I then received a sharp rap on the knuckles from the editorial ruler in consequence, which, I trust, has had due effect on my subsequent behaviour.

The plan I adopt for testing the relative value of different samples of glass, &c., as adiactinic (not non-actinic) media, may be useful to some of your readers, and is as follows:—I have an old quarter-plate dark slide, to the front of which (the sliding shutter having been removed) is attached a clip composed of two pieces of wood about three-eighths of an inch thick, lined on their inner surfaces with velvet, and hinged together at one side by a strip of leather; two openings are cut quite through these—one circular, the other square—of about 1 inch in width, and a short tube of cardboard fitted to each, extending inwards so as nearly to touch the surface of the prepared plate when in its place; these serve to keep the two openings quite distinct. Any two pieces of glass, or other material, being placed over the two openings respectively, and the hinged flap brought down and retained by an elastic band, the sensitive plate is introduced and exposed to daylight for (say) five to eight minutes; on developing, the amount of actinic effect, if any, or the relative degrees of action through the two openings, is readily appreciated and distinguished by the difference in the form of the apertures; at the same time that the presence of any fogging due to causes other than that of light is rendered apparent.

I have found the above plan to answer well, and I feel sure that those who try it, or something similar, will derive much advantage from it.—I am, sir, yours obediently,

Stockwell, May 21st, 1869. C. W. Smartt.

WET COLLODION IN THE FIELD WITHOUT A TENT.

Dear Sir,—Mr. Whiting is wrong if he thinks that my letter about his camera was written in an unfriendly spirit, or that I wished to disparage it. Fair criticism is, I think, desirable, and in this case it has given him the opportunity of answering what was considered an objection.

I quite agree with Mr. Gulliver, that the drawback to this method of working without a tent is the difficulty of coating a plate properly when the wind is blowing, but I imagine it is a difficulty that may be overcome; and I suggested, in a letter to the News some time since, that possibly some means might be found of preventing the collodion from drying quickly, so as to enable the plates to be coated before going out, or in some sheltered place when out. I always put two or three drops of glycerine into the collodion, but this would probably not be sufficient for the purpose; the question is, whether sufficient could be added without prejudice. They should, I imagine, be in a separate plate-box, but that would only necessitate the taking an empty plate-box to put the negatives into.

With regard to the camera being level, there is no more necessity for that in mine, and I imagine in Mr. Whiting's also, than with the ordinary camera. It is quite separate from the baths.—Believe me, yours very truly,

Thomas Barrett.

Mead Vale, Red Hill, May 24th, 1869.

WHITING'S PHOTO-CAMERA-LUCIDA.

Dear Sir,—Will you allow me to correct one or two misconceptions contained in Mr. Gulliver's letter in last week's News, having reference to the working of the above apparatus?

He there states that when he formerly tried to "develop by dipping" he did not succeed, but that by referring to the description of Mr. Barrett's plan, which was published in the News some years ago, he found that that gentleman recommends the use of a "neutral bath," and "perhaps," he (Mr. G.) says, "it is in this little thing that the whole secret lies."

Now, in reply to this, I beg to say that those who use my apparatus are not tied to any special form of chemicals whatever, and that there is really no "little thing" or "secret" at all in the case. The ordinary collodion, silver bath, and iron developing solution may be used; and if these be of a good sample, and are in good condition, and if ordinary care and intelligence be observed in their use, a satisfactory result must follow.

In regard to "coating the plate in the open air," which he seems to think so very objectionable, I may remark that I have never found any difficulty in doing it. If—which is very seldom the case—I cannot find any friendly "nook or corner" to do it in, I invariably extemporize one by the use of an umbrella. With this the thing is easily accomplished, and as no travelling photographer is, of course, without one, there need be no difficulty in the matter.

Another point to which your correspondent refers is certainly a rather curious one: he says the plan "involves" the necessity of the "camera being level," and he considers this to be a great drawback. Now, it is very annoying to me that anyone should lay this down as an objection to my plan, for it really is not due to it, and, strangely so, if it was, it would be no objection. As an old photographer, Mr. Gulliver surely must know that for out-door work a camera should always be level, so that if my plan did "involve" it, it would be no objection; but the plan does not "involve" it. Why, then, does he say so? If your readers will kindly refer to the description of my Photo-Camera-Lucida which you did me the honour to publish in the recent numbers of the News, they will find that the chemical part of the apparatus is entirely separate and distinct from the camera or exposing part, and that, consequently, the latter can be placed anywhere with as much facility as any other. Mr. Gulliver admits having read this description with "much interest," and I am naturally puzzled to account for his bringing this forward as an objection.—I am, dear sir, yours obliged,

Wm. Whiting.

May 25th, 1869.

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Source of Art Claims.—The difficulty of admitting the art position of photography arises not so much from any defect in the actual process, or in the results which it produces, as from the fact that but few photographers have taken the trouble to learn even the most elementary laws which govern all arts alike.—*Nelson K. Cherrill.*

Talk in the Studio.

"Light Dues."—Photographers' charges.—*Punch.*

India-Rubber Funnels.—Our esteemed correspondent "Ennel," who is well-known to photographers for his fertility in devices for facilitating manipulation, recently sent us an india-rubber funnel of a very simple and convenient character. It is manufactured from thin sheet india-rubber (not vulcanized) the example in question having been made from the material of an old tobacco pouch. The conical cup is made by cutting a piece of the sheet to the proper shape, and cementing the edges together; the tube is made separately, and cemented to the bottom of the cup. It has the advantage of being light, flexible, inexpensive, and convenient.

The Photographer and the Princess.—The *Hungarian Lloyd* is responsible for the following anecdote:—A short time since the eldest daughter of Princess Frederick Charles of Prussia, aged 14, and the daughter of the Crown Princess, aged 9, were waiting in a photographer's studio to have their portraits taken. The photographer, having for a moment forgotten the rank of his sitters, addressed the elder princess as "gnadiges Fraulein," the common appellation in German of all unmarried ladies. He was immediately corrected by the remark, "People generally call me 'Your Royal Highness.'" The offender's excuses were interrupted by the little cousin, who exclaimed, "That doesn't matter the least; you can call me as you please. I had rather you called me 'Fat Lotty' (*dicke Lotte*); my father always calls me so."

Collodion for Protecting Silver Wares.—The *Mechanics' Magazine* describes the use of collodion as a means of protecting silver ware from atmospheric action. As collodion is permeable to moisture, we should scarcely have expected the protection to be as good as that of a resinous varnish. "The loss of silver," it says, "which results from the impregnation of our atmosphere with sulphur compounds, especially where gas is burned, is very great. It has been said that many thousands of pounds' worth go down our sewers annually in the form of dirt from plate cleaning, and the loss of one large house on Cornhill from this source has been described to us as serious. Silversmiths may, then, thank one of their confraternity—Herr Strolberger, of Munich—for a happy thought. He seems to have tried various plans to save his silver if possible. He covered his goods with a clear white varnish, but found that it soon turned yellow in the window, and spoilt the look of his wares. Then he tried water glass (solution of silicate of potash), but this did not answer. He tried some other solutions, to no purpose. But at last he hit upon the expedient of doing his goods over with a thin coating of collodion, which he finds to answer perfectly. No more loss of silver, and no longer incessant labour in keeping it clean. The plan he adopts is this:—He first warms the articles to be coated, and then pays them carefully over with a thinnish collodion diluted with alcohol, using a wide, soft brush for the purpose. Generally, he says, it is not advisable to do them over more than once. Silver goods, he tells us, protected in this way, have been exposed in his window more than a year, and are as bright as ever, while others unprotected have become perfectly black in a few months."

Alleged Improper Registration of Copyright.—In the case the Queen *v.* Walker, Mr. Underdown said that on the last day of last term he moved on behalf of the defendant Walker, who was undergoing a sentence of imprisonment for pirating certain works of art, the property of Mr. Graves, with a view to upsetting the conviction, but the Court refused the application on the ground that Walker was not a person aggrieved within the meaning of the Copyright Act. He now asked to be allowed to renew his application, on the ground that the case of "Chappel *v.* Purday," upon which the Court based its decision, was erroneously reported in the law report referred to at the time, but which was correctly reported in another work, and which stated that a person aggrieved ought not to be compared to persons who simply claimed a title in the work of art. The Court said that in consequence of the confusion in the cases as reported, the learned counsel might take a rule nisi. Rule nisi granted.

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To Correspondents.

N. S. P.—Iron solutions are now used very extensively for intensifying, pyrogallic rarely being used in the ordinary practice of the wet process. In some cases, the same iron solution which is used for developing is also used for intensifying. Some operators, if they find that the image is not sufficiently intense, wash the film, flow a little silver solution over it, and then apply the ordinary developer again; some add a few drops of silver solution to the same iron solution; some use the same iron solution, but add to it a few drops of a citro-silver solution, consisting of 20 grains of nitrate of silver and 30 grains of citric acid in an ounce of water; some use, as an intensifier, a 5-grain solution of iron with 5 grains of citric acid. The decision as to which of these methods is best depends upon a number of circumstances, and must be determined by each photographer for himself. The two last mentioned are the safest. 2. Information of a valuable character on the subject of photographic lenses can only be "picked up" from various sources. You will find valuable information on the subject in various articles in our pages, and especially in our Year-Books. See the two last published. If you wish for information on any specific point, state it, and, if we can, we shall have pleasure in aiding you.

D. Rees.—When you obtain a sharp image on the ground glass, and one which is not sharp on the sensitive plate, it must proceed from one of two causes: either the sensitive plate is not in the same plane as the ground glass, or the chemical and visual foci of the lens do not coincide. It is very easy to be deceived as to the former, as very careful measurement is necessary to obtain certainty, and difference in the plane of the ground glass and of the sensitive plate is a common cause of the defect. If you are absolutely certain that the evil is not from that cause, the maker of the lens can best help you.

H. F.—It is impossible to speak with exactness of the ratio of impoverishment of the silver bath by the collodion, inasmuch as it depends on the quantity of iodides and bromides in the collodion and the atomic weight of the salts used. Speaking very roughly, however, and estimating each ounce of collodion to contain 5 grains of iodide and bromide of (say) cadmium, the amount of nitrate of silver used would be very nearly the same as the amount of the cadmium salts; that is, for each ounce of collodion about 5 grains of nitrate of silver would be used. This is a rough estimate of the matter, and might be used as a guide in strengthening the bath. Mr. Fennemore doubtless meant gallons, as he is probably speaking of a bath used for large plates. 2. We have no doubt that the collodions you mention may be mixed without disadvantage, but we cannot speak with certainty, as the formulæ by which they are prepared are unknown to us.

W. L. S.—The hypo bath should be, we think, quite as strong as that used for paper, and the print should be left in it as long as usual. It is probable that the yellow discolouration you mention is due to imperfect fixation.

Antipodean.—It is a pity you did not mention what dry process you employ when using the collodion of which you complain. The necessary delay of a reply reaching New Zealand renders it desirable that our answer to you should be explicit, and that it can scarcely be without a knowledge of the process employed. It is very probable, however, that the collodion is not in fault in regard to the blisters and wrinkles of which you speak. They are probably caused by the albumen substratum, which, if imperfectly coagulated, is apt to cause blisters when the plate is in the fixing bath. From your description of the collodion it seems very good. The remedy will probably consist in using a more dilute solution of albumen for the preliminary coating, or in coagulating the film before applying the collodion. See article on that subject in our next number. In the collodio-albumen process the occurrence of blisters, &c., during fixation is often prevented by adding a little acetic acid to the hypo bath.

J. W. Smith.—We will hand the amount to the Secretary.

Studio 30 by 12.—Your general plan is good, and will, we have no doubt, be efficient. The only modification we should make would be the omission of the direct front-light. You will, of course, have efficient blinds for excluding direct sunlight from the south when necessary.

A Subscriber.—The article to which you refer was a translation from the German, and as some years have elapsed we have no means of referring to the original now. It is probable, however, that in the second part of the formula 800 cubic centimetres of water, instead of 80, have been intended.

Treglw.—The stains are caused by hyposulphite of soda coming into contact with the prints previous to fixation. It is very probable, from the appearance, that the dish in which the washing of the prints, previous to toning or fixing, has been conducted, has contained hypo, or, probably, it has been used at some time to wash the prints in after fixing.

P. P.—The negative from which the print you enclose has been produced required a little more intensifying, or the more liberal addition of silver to the developing solution. The face in a portrait being too dark may be due to imperfect illumination, under-exposure, or insufficient intensifying. 2. You can prepare carbon tissue by dissolving 1 ounce of gelatine and 2 drachms of sugar in 4 ounces of water, and adding sufficient Indian ink, or other colouring matter, to produce the desired tint, and applying the mixture, whilst warm, to paper. 3. It is very possible to wash prints too much before toning. Much washing makes toning slow, and the result poor. 4. The deposit on the dipper and sides of the bath is doubtless reduced silver. 5. Rich black tones are more dependent on the use of good and vigorous negatives than on any special toning bath; but for obtaining deep blacks with little trouble, the lime bath is excellent.

K. Hearn.—The test of having added sufficient of the permanganate solution to water is, as you suppose, the retention by the water of a slight degree of colour. So long as the water becomes colourless there is organic matter present. The reactions are curious and interesting: permanganate of potash contains a large amount of oxygen loosely combined; the organic matter present in water always contains hydrogen, carbon, &c., and the permanganate giving up oxygen to these substances, the hydrogen forms water; the carbon forms carbonic acid, and other elements of organic matter are changed into harmless substances; whilst the permanganate, being robbed of oxygen, forms a binoxide of manganese, which is precipitated as a brown powder. Some metallic salts are removed from water by the permanganate, but not usually those contained in common water. As a rule, nitrate of silver and sunning will remove these. The best purifier is permanganate of silver, as it removes both organic and inorganic impurities. 2. The object of iodizing a bath is to prevent the solution redissolving the iodide of silver formed in the film. Iodide of silver is, to a slight extent, soluble in a solution of nitrate of silver, and, unless the appetite of the silver solution be partially satisfied by iodizing, it would attack the coating formed in the bath, and redissolve it. If the bath be insufficiently iodized, this will take place in less degree; if it be over-iodized, there is a constant tendency to the formation of crystals of iodo-nitrate of silver, which cause pinholes. 3. The deposit caused by sunning is reduced silver. It can be removed from the sides of a bottle, if required, by means of strong cyanide solution. 4. If a silver solution were evaporated in an iron vessel, much of the silver would be reduced by the iron to a metallic state.

J. Carter Browne.—We have met with a similar sample of tannin to that you describe, making an opalescent solution having an orange tint by transmitted light. It answered perfectly well for photographic purposes. It probably will clear by long subsidence, although not easily by filtration. Samples of tannin frequently contain more or less of resinous impurities, which, although insoluble, are difficult to remove by filtration. The only suggestion we can make to explain the inky layer of the solution which was seen during filtration is, the possible existence of an impurity in the filtering paper—possibly iron—which became gradually dissolved, and so caused the tint in question. 2. The gallic acid has probably not been so perfectly purified by animal charcoal in the process of manufacture as usual. 3. We do not think that the Rev. Arthur Cotton has ever published his photograph of Sinai. It is a very excellent picture; he kindly gave us a copy some years ago, but we have never heard of its publication. It is probable that by placing yourself in direct communication with him you might obtain a copy. 4. The action of carbolic acid in photography has not yet been much investigated. It has been recommended as an addition to the collodion, and also to the negative bath, as a means of preventing change and of conferring sensitiveness. It is useful in preventing discolouration in the paper bath.

Ground-work.—We believe that the lenses of the English opticians are decidedly the best. Triple and double combinations are decidedly superior to the old form of view lenses where architecture is concerned, as the latter give curved marginal lines, whilst the new lenses give perfectly straight lines. For rapid work, landscape, and architecture, it is probable that the rapid rectilinear will best suit your purpose.

G.—Undoubtedly the copyright belongs to you, and undoubtedly any one exhibiting the picture without your permission is violating the copyright. The prohibitions of the Act include exhibition: the terms used in the sixth clause impose penalties on any one who shall "sell, publish, let to hire, exhibit, or distribute," without the consent of the owner of the copyright. In giving instructions to have the picture painted for yourself, you have not in any way vitiated your property in the copyright.

C. G. E.—You will find Mr. Fry's method of albuminizing plates described in our number for March 19th.

Domingo Pinto de Faria.—It had escaped our attention that you wished to become a member of the South London Society. We will attend to the matter, and also mention to the Secretaries of both Societies your wish in relation to the presentation print.

Several Correspondents in our next.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

THE PHOTOGRAPHIC NEWS.

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PRELIMINARY COATINGS FOR GLASS PLATES.

Last week, in pointing out the dangers of employing india-rubber in photography, we expressed a conviction that no serious danger need be apprehended from the decomposition of the infinitesimally thin film used as a preliminary coating for dry plates. But the question will naturally arise, Why use a perishable substance at all where the possible safety of a valuable negative is dependent on its stability? The answer will be, that no other substance has been found to answer so well for securing adhesion of the film in dry plates without risk of blistering, &c. Albumen, which possesses many valuable properties as a preliminary coating, has two serious drawbacks: it is supposed to injure the bath, and it causes blisters during development, fixing, &c., of the dry-plate negative, especially when alkaline development is employed.

An important question arises, then: Cannot these defects in albumen as a preliminary coating be overcome? We think they can. The first difficulty has already been overcome by the use of dilute albumen; and we may remark, in passing, that were the albumen solution for preliminary coatings made as dilute as the india-rubber solution used for a similar purpose, it is probable that neither blisters nor injury to the bath would arise. The practice in regard to albumen preliminary coatings used to be, that the undiluted white of egg was employed, and this, whilst giving excellent qualities to the resulting negative, was found to injure the negative bath. Gradually we find the tendency to use weaker and weaker albumen solutions with corresponding advantage, and we no longer hear of any injury to the bath arising from its use. We believe that both the evils of albumen coatings arose from the same cause, the use of too concentrated solutions causing an unnecessarily thick film. We have seen that injury to the bath has arisen from this source; now let us see how the same cause produces blisters.

We have reason to believe that the chief cause of blisters in an albumen film is imperfect coagulation. If the layer of albumen be of any appreciable thickness, the upper surface is possibly partially coagulated by the action of the ether and alcohol in the collodion; and if no coagulation is effected by this means, it is produced by the action of the nitrate of silver during the time the plate is in the bath. If the layer be very thin, it is probable that complete coagulation may be effected in the bath; but the thicker the film the less is the chance for this complete coagulation. When the partially coagulated film is submitted to the action of the developing and fixing solutions—especially if these are in any degree alkaline—the fluid gradually passing through the coagulated portion of the layer reaches that portion which is in contact with the glass, which, not being coagulated, and consequently soluble, blisters are a natural consequence. If the film of albumen were thoroughly coagulated throughout, it would, of course, be insoluble, and no blisters would be likely to arise. The same facts occur occasionally in the case of albuminized paper. Blisters not unfrequently occur in albuminized prints whilst in the alkaline toning bath or fixing bath, but only in the case of very highly albuminized paper, especially in Rive paper, where a thick layer of albumen rests on the surface. With double albuminized paper these blisters are almost inevitable. With slightly albuminized paper they are never seen. The defect is due to imperfect coagulation of the albumen, the action of the silver solution not having passed quite through the thick layer of albumen; its under surface readily absorbs water and softens, or it is dissolved by the slightly alkaline toning or fixing bath, and blisters ensue. One remedy consists in subjecting the print to the action of alcohol, or adding a large proportion of alcohol to the fixing bath. A better remedy is the perfect coagulation of the albumen by long floating on the silver bath.

The remedy for blisters, then, when produced in the preliminary coating of albumen in dry plates, is perfect coagulation. This, it is probable, would be easily effected in the ordinary operations, if a very dilute solution of albumen were employed, leaving a layer as attenuated as that produced by a one-grain solution of india-rubber. But, to make assurance doubly sure, it is easy to coagulate the albumen film before applying the collodion, and that course, it is probable, would be the most satisfactory. The coagulation is easily effected by means of protosulphate of iron, which, after thorough washing, leaves nothing in any way injurious, and with plates so treated there is no danger whatever to the bath. For the benefit of those wishing to try this method, we subjoin the instructions we received some years ago from Mr. McNab, a gentleman who had given the plan an extended trial, using it for all his plates in an extensive business in portraiture, and with uniform success. We give Mr. McNab's method, with his comments. He says:—

"First of all, a flattened sheet of crown glass, free from kiln smoke, is carefully selected; this effects a considerable saving in the price. They are washed in water strongly acidulated with nitric acid, and afterwards in a copious stream of pure water from a tap, and then put into a rack to drain a little. In the wet state they are coated with albumen in the same way as you coat a plate with collodion; the superfluous albumen is drained through a filter into a wide-mouthed bottle, to be ready for future use; the plates, after draining, are put upon a rack before a brisk fire to dry, and then to be stowed away in packages, to be ready at any future time to be coagulated ready for use. In this state a great many are prepared at one time, and generally two hands are at work on them at the same time, the one to wash, the other to coat with albumen.

"When wanted for use they are taken out of the packages, and one after the other wetted all over under a flowing tap. A saturated solution of sulphate of iron acidified with sulphuric acid is now poured over the plates, the same as if you were developing the plate; the solution is made to flow over the plate in one continuous, unbroken wave, and kept floating upon the plate for a short time, and afterwards washed in abundance of water. It is now placed in the rack before a brisk fire, and dried. After they are dried, they are carefully cleaned upon the back and marked, as it would now be difficult to find out the prepared surface. I have never experienced any difficulty in covering the plate with collodion.

"In preparing the albumen, I take white of eggs with the germs carefully taken out, and beat them up in a bason for some fifteen to twenty minutes till it gets into light, white froth. It is allowed to settle, and three parts of water to one of egg are added, and filtered into a large bottle: liquor of ammonia is added till it sensibly smells of it. This helps to preserve it.

"The advantages of a preliminary coating of albumen to the glass are cheapness in the price of flattened sheet for large plates; the collodion, however tender, adheres with tenacity, and is with difficulty removed; less labour, and more certainty in the preparation of the plates; freedom from blemishes of every sort; the negatives will stand much rougher usage, and are somewhat firmer in texture; and I do not find the bath more liable to get out of order than with plates in common use. I have worked with baths until they were unfit for use from the large quantity of ether and alcohol they contained, without having a foggy plate. I have thought that after long use they showed symptoms of loss of sensitiveness, but I am not quite sure but that the same may be said of a bath somewhat improved from constant use, when it begins to show symptoms of coming age.

"To all who are in the habit of using large plates for out-door work or copying, or printing large transparencies, it offers many advantages, not the least being a temper unruffled by losing films from off the plates, and perfect immunity from spots and blemishes, so far as the preparation of the plates is concerned."

It will be seen that Mr. McNab's arrangements comprehend facilities for using this method on a large scale, and that he finds many advantages, and no defects, in using it for wet plates. His albumen solution is not very dilute, but recent experience has shown that the strength may be reduced very considerably without disadvantage. Mr. Fry uses one part of albumen in ten of water; another trustworthy correspondent, signing "Kent," says he has found it answer when diluted to one part in thirty of water. It is probable that when used thus dilute its physical advantages in securing adhesion and cleanliness will be more marked than the chemical action in securing vigour and richness of colour, at one time sought successfully by its use.

For one especial purpose the albumen coating possesses an important advantage: we refer to its use upon old plates. An experienced portraitist recently remarked to us that a stock of dilute albumen was always kept ready in his establishment, and applied as an invariable rule to all plates which had been once used, giving an absolute immunity from the trouble of dirty plates. It was also generally used for large plates required for the Sarony photo-crayons, and prevented many risks whilst giving a rich image.

We think the evidence in favour of albumen preliminary coatings, under proper conditions, is tolerably conclusive, even in the wet process, and we feel satisfied that by a careful observation of conditions, general success might be obtained with its use in dry-plate work, even in those cases in which hitherto its tendency to blister has been an insuperable objection.

SINGULAR CAUSE OF SPOTS IN PRINTS.

A curious cause for the minute yellow spots which frequently trouble portraitists was recently traced to its source by one of our correspondents. It is scarcely probable that the same cause is in frequent operation, but a brief account of the matter may be interesting and suggestive. In the case to which we refer the spots had perplexed our correspondent for many months past. They were minute and numerous, yellow in colour, with a dark centre. The most obvious cause for the spots appeared to be imperfect fixation. When our advice was sought on the subject, it seemed certain to us that imperfect fixation was the immediate cause, and that the spots were due to the formation of minute bubbles on the surface of the print when it was immersed in the hypo fixing bath. Attention to this and all other ordinary causes of spots did not, however, serve to get rid of the evil. Sample after sample of paper, sample after sample of silver, gold, and hypo was tried in succession, but without any mitigation of the trouble, and as a large portion of the work done consisted of card vignettes, the spots were as obtrusively apparent as they were disastrous. The printer was a careful and trustworthy man; but all his care failed to discover either the cause or means of avoiding the spots.

At length the cause was discovered in a very unexpected quarter; the principal of the establishment went into the printing room one morning early, to see if the spots were as plentiful and troublesome as ever. He noticed that many of the prints had floated to the top of the water in the large washing trough, the surface of the water being covered with a dusty deposit. On examining carefully he found that wherever this dust rested on a print, a spot was found under each particle; and on further examination he found that the dust partook of the nature of very fine ashes. Gradually he traced the whole facts: a stove in which coke was burnt as fuel was used to warm the room, and the coke in use at the time had contained a large proportion of sulphur, the especial visitation of the spots being consequent on the purchase of a new stock of coke, which turned out to be of inferior quality. With the disuse of the fire the spots at once disappeared, and have not been seen since.

"REMBRANDT EFFECTS," AND HOW TO PRODUCE THEM.

We have received recently from America some examples of what are termed "Rembrandt Effects," which are exciting interest amongst our transatlantic cousins at present. The effects in question are produced by applying to portraiture a similar system of lighting to that occasionally employed with statuary, of which the well-known photograph of a figure entitled "Purity" was one of the earliest and most popular examples. In some of the examples we have seen the result is very striking and effective. The figure is generally vignetted into a very dark background: the face, which is generally in profile, is generally in a dark mezzotint throughout, except the outline of the features, which is illuminated with a brilliant line of light, which may also just tip other portions of the outline. Sometimes a full face or three-quarter view may be taken, but the same principle is retained: the features generally being kept in half-shadow, some portions only being brilliantly lighted. In these pictures the mass of the subject throughout is kept in shadow, to give intense value to the minute portions of brilliant light, chiefly on the head; the general balance of light and shade suggesting the title which has been given to the style in the States, "Rembrandt Effects." Amongst the most successful of the producers of this class of picture the works of Mr. Kurtz, one of the most able of the New York portraitists, and Mr. W. J. Baker, have excited most attention. The latter gentleman, writing in the *Philadelphia Photographer* on the subject, describes his mode of producing them. We subjoin a condensation of his remarks.

"My attention was, about a year ago, first called to this style of picture, by some photographs of marbles, said to have been taken in London.

"How such a lighting had been obtained was, at that time, quite a puzzle. There seemed to be a glow of light all around the profile, that reminded one of a sacred halo, 'such as limners paint.' A little attention and study revealed the secret, and my initial experiment, on a plaster cast, was completely successful.

"The idea then occurred, how nice this would be with a living subject, and, at the same time, apparent difficulties presented themselves. The cast or marble is one homogeneous complexion; but would not the varying tints of life oppose the even grading of the light, and render the picture patchy? Would not dark hair be lost in the shadow behind, and fail to come out? These, and other doubts, could only be solved by experiment.

"During an hour's leisure, a sitter was tried here and there under the light, reflecting screens placed in different situations, till, when the right effect seemed obtained, the camera was focussed, and the negative of 'Little Nell' taken at the first trial.

"Since then I have gradually been simplifying my working to the point which I will try to explain.

"No part of the light is closed, but left as for an ordinary sitting. The subject is placed at about the usual point under the light, and well supported by a firm back and head-rest. But one reflector is used, placed close behind the sitter on a line at right angles to the line of principal light. The camera faces the light, and must be shielded. For this purpose, the slide of the plate-holder, aided with the focussing-cloth, is effectual. The background should be dark. Mine is black velvet, and leaves clear glass on the negative. The vignetting may be done in the camera, or by a black cloth laid over the arm of a head-rest, placed in front of the lens. The exposure is nearly twice the ordinary length. Developing as usual.

"The light effect can be varied on the following principles, to produce a more or less severe 'Rembrandt:'—The sitter being posed, the light becomes sharper and more brilliant, when the camera gives an exact profile (situation first). By now moving the subject nearer the camera, and retreating with that, the shadows are deepened and the lights strengthened. Again, move the sitter ahead, this time on a line at right angles to the last line of motion. The chances are that this situation would not answer, except for very regular features and light hair. To obtain a very soft, even illumination, go back to the first situation; now, instead of moving toward the camera, recede, and go out a little further under the light, then bring the camera round so as to include a little more than the exact profile. Of course, the effect at any point can be varied by turning the face more to the light, or away from it, and by moving the camera so as to take more or less of a front view, and by varying the position of the reflecting screen.

"The 'Rembrandt' style gives the operator greater power over the light, than any other method, to alter expression by the shading, to conceal or reveal salient features; and while at first sight it would be deemed only suitable for 'classic profiles,' yet in practice there will be found very few physiognomies that cannot be made interesting in one or another of the many modifications of the effect.

"The right management will be found with a little practice, and, from the rapidity with which my collection has increased, it cannot be doubted but that customers will willingly pay the extra charge demanded by the additional time and skill required to produce this class of work.

"It will pay, if only as an advertisement, by the wonder it excites. Mumler's 'spritool picturs' could not have inspired more amazement than did the photograph of 'Little Nell' when first placed in my show-case; and now people daily ask the absurdest questions about them.

"Many strenuously insist that they are taken by night; others have a vague idea that somehow the light is concentrated in front, or that the light is let in through a very small hole; and most are quite unwilling to believe that there is no hocus-pocus about the process. The universal inquiry is: What do you call those shadow-pictures? Mothers seek engagements for the tender infant of days, for a 'Rembrandt;' affectionate aunts usher in snub-nosed urchins, to be taken just as a surprise to papa; and one and all 'wonder how he does that.' But now the secret is out to you and your subscribers."

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The Photographic Season—Photography as a Witness, Photography as a Spy, Photography as an Impostor—The Collodion Controversy—The Societies.

One of the chief topics of conversation amongst my photographic friends during the last few weeks has been the unpropitious promise of the photographic season; landscape photographers especially exchange gloomy condolences on the prevalence of wind, and rain, and dull skies, in place of bright spring weather. Depressing enough, undoubtedly, for all interested in photography, either professionally or as amateurs. I am writing on the first of June, with a bright fire almost as necessary as on the first of December! I suppose, however, that the summer will come; and, in the meantime, there has been one consolation for landscape photographers: they have had glorious opportunity of securing cloud negatives, of which I hope they have made good use.

Photography, as a trustworthy witness, is daily receiving new forms of application. I recently heard of a case in which the opponents of some private Bill before a parliamentry committee contrived to make great capital out of a description, in the style of the late George Robins, of the valuable property, with its stately mansion, which would be injured by the scheme of the promoters of the Bill. This was on Friday afternoon, and the committee met again on Monday. In response to a despatch sent off on the Friday evening, on Monday morning photographs of the property, which was some hundreds of miles from town, were ready for the examination of the committee: the stately mansion of florid description dwindled to a cowshed or a barn of fact, and the case based upon oratory was destroyed by the prosaic photographic reality.

Photography as witness was made recently, if I am correctly informed, to officiate as a spy and tell-tale in a very curious manner. Frith, in his famous painting of the Derby day, has given an admirable rendering of the general scene on Epsom Downs; but, fortunately, his painting does not consist of portraits. The gentlemen who are drinking champagne with Lais and Phryne cannot be identified as those excellent citizens who have been suddenly called from home or office by business of vital importance, or by illness, or the death of relations. On the last Derby day, however, it is stated that a camera was actively in obtaining groups, not with a view to their pictorial value, so much as their personal interest, and that the negatives commanded a high price, with a view to instant destruction! The camera was planted near any carriage where a gay group was suitably presented, and, after a negative had been obtained, a gipsy maid, resigning, for the occasion, fortune-telling, proceeded to the carriage, and, calling attention to the camera, made a bargain with some of the "pretty gentlemen" for the photograph. Whether actual photographs were obtained, either as glass positives or negatives, I really cannot say; I have grave doubts as to whether it was not merely a clever trick for practising on the fears of consciously detected transgressors; but I am assured that the trick was extensively and profitably practised on Wednesday week at Epsom.

The "spirit photograph" trick is, however, more bare-faced and impudent than even this. Is it not surprising that in a land where education is supposed to be universal, and, as alleged by its admirers, of the most perfect kind, such a clumsy imposture should receive a moment's credence? Our American cousins are undoubtedly a shrewd people; and yet it seems that in New York a photographer has been doing a thriving business in producing portraits of his sitters with a dim ghostly shrouded figure in the background, alleged to be the portrait of some ministering spirit of a deceased friend hovering near. And when, finally, the perpetrator of this trick was charged with imposture before a magistrate, he boldly maintained the supernatural character of the photographs, and, notwithstanding the testimony of several of the most able professional and amateur photographers, to the effect that the result exhibited was clearly traceable to means possible to every photographer, several of which were described, the accused was set at liberty. According to the *New York Herald*, some rather unseemly badinage took place in court. I subjoin an extract.

> One of the most amusing things of the very amusing "spirit photograph" trial is the question asked Mr. Bogardus by the counsel for the defendant, viz.: Whether or not he supposed that, if a photographer had been present at the interview between Saul and the ghost of Samuel, he could have taken a photograph of the ghost?
>
> This is a fresh question; one which, so far as our knowledge of biblical literature extends, has never been discussed by even the wildest of commentators. The scene which it calls up before the mind is delightful to contemplate. The interview took place at night—a point which evidently escaped the attention of both the counsel and Mr. Bogardus—thus the photographs would have had to be taken by the light of the moon, struggling through the ragged clouds of a murky night, or with a calcium or magnesium light. Saul, King of Israel, starts out, accompanied by the artist, whose presence does not in the least disconcert the Witch of Endor. The ghost appears; the artist adjusts his camera, puts the black cloth over his head, and gets the ghost in focus, asking it to "throw its head a little back." Then the artist takes out his watch and requests the ghost to look at it for a few minutes. In the meantime Saul and the Witch perform a tableau.
>
> It is difficult to take a photograph at night, even when the object to be delineated is more substantial than a disembodied spirit, and, at best, the photograph of a ghost can only be the ghost of a photograph.
>
> If the trial should prove that "spirit photographs" *can* be taken, we suggest an experiment: Let some artist endeavour to try his art yet further, and settle a quibble for us. Let him try to get a photograph of M. Comte. It would be so delightful to have a negative of a positivist!

I have been somewhat amused at the attempt to get up a controversy in the pages of a contemporary on the subject of collodion. A gentleman well-known as the manufacturer of a popular collodion having, by dint of cross-examination, been induced to disclose certain of the details of his manufacturing operations, is forthwith attacked as not having given sufficiently precise instructions to enable the writer of the letter, whose name appears in advertisements as the maker or inventor of another commercial collodion, to produce good pyroxyline at a temperature so low as that stated in the remarks addressed to the Society, and the first-mentioned manufacturer is challenged to state fully the results of his many years' experience in collodion making, and generally justify his position! Now, if the photographic community at large would be benefitted by the publication of the information, I am inclined to fancy that the gentleman challenged, Mr. Blanchard, would be generous enough to give them the benefit of costly experience; but since photographers rarely make their own collodion, still more rarely their own pyroxyline, the publication of his mode of working could only be of interest to other manufacturers, to whom it is scarcely to be expected that any one having competing interests would be Quixotic enough to unveil his operations. I cannot help feeling some degree of regret that in such a discussion it becomes necessary to say anything apparently disrespectful of a man like Mr. Hardwich, who, as an earnest, if not very successful worker in the chemistry of photography, was esteemed by all who knew him. That he worked hard to throw light upon the conditions required in photographic collodion there cannot be a doubt; but that his final formula is satisfactorily workable I do not think any one will have the hardihood to allege. To the gentleman who now manufactures the excellent collodion bearing the name of Mr. Hardwich is due, I have always understood, the credit of so modifying and improving the formula as to render it practicable.

Secrecy in photography is a thing undoubtedly to be deprecated, and, with the writer to whose letter I have referred, I believe that very few secrets exist in the general practice of photography. With regard to the manufacture of various photographic preparations, I think that secrets undoubtedly, and as naturally and justifiably, do exist, and that they would only mislead the public, if, like Canning's—not Southey's—needy knife-grinder, they declared that story "they had none to tell."

The revival of the velocipede mania—for it is, after all, only the revival of a thing played out many years ago—possesses an especial interest to the amateur photographer, as it presents, at first sight, a promise of settling the often discussed point as to how to ramble, with the necessary impedimenta for obtaining views, without the necessity of having an attendant to assist. I am afraid that the fact that the velocipede is best suited to level country, which is generally the least picturesque, will interpose a barrier to its very extensive or valuable photographic use. At present, I must confess that I have been unable to see much gain to the photographer beyond the fun of the novelty. It is odd enough how the velocipede and photography seem linked and associated. Nicephore Niepce, the practical founder of photography, was the inventor of the velocipede. More than a score of years ago one of the most expert velocipedists, and most intelligently interested in velocipedes, was Mr. J. E. Mayall; and one of the crack velocipedists—or velocipedestrians, whichever is correct—is his son, Mr. J. Mayall.

The meetings of societies have continued interesting. At the Parent Society an excellent paper on the carbon process, by Mr. Johnson, was read. Unfortunately, his indisposition deprived the members of the promised demonstration; and, fortunately, it is yet to come, for it is promised at the next meeting. A good discussion was raised on the cracking of negative films, by the exhibition by Mrs. Cameron of many of her negatives, which were covered with fine cracks. It was a singular and interesting incident for a lady to come and take an active part before the members, by laying her troubles before them, and it was creditable to the President's politeness that, seeing the lady had come for advice and aid, he should have proposed a vote of thanks to her "for her communication." At the North London the proceedings were of a conversational character. At the South an exhibition meeting was held, a capital display of pictures affording much opportunity for agreeable and instructive conversation.

The Edinburgh Society has had several good papers and good discussions: printing on ivory, printing on any surface, and velocipedes, being amongst the subjects.

TRANSFER OF FILMS AND OTHER MANIPULATIONS.

Adolf Ost's Pamphlet.

It will be remembered that some discussion has recently taken place in Berlin and elsewhere—to which we have alluded in our *Foreign Miscellanea*, 19th March and 21st May—respecting the publication, by M. Adolf Ost, of Vienna, of a pamphlet purporting to contain new and valuable information relative to certain photographic processes. The price of the work is fixed at ten florins, and on many sides doubts have been expressed of the *bonâ fide* nature of the contents, or, rather, as to its actual relative value, in so far as the novelty of the manipulations described is concerned. Dr. Vogel, in the *Mittheilungen*, affords the following information in regard to M. Ost's work :—

The pamphlet of M. A. Ost, containing information relative to the production and employment of transfer paper, collodion paper, the multiplication of negatives, &c., is in our hands, and we are in a position, therefore, to report upon his methods. The basis of his processes is the collodio-chloride, the preparation of which is described; the details we do not feel ourselves justified to communicate, but the compound is itself purchasable in a condition fit for use. The collodio-chloride film is, by means of transfer paper, brought upon a sheet of paper previously coated with a gelatine solution prepared in the proportion of 1 to 13. The collodio-chloride is applied to a surface in the same manner as ordinary collodion, with the exception that two coatings are given, the second being poured on as soon as the first has dried upon the paper, and in an opposite direction to that of the first application, in order to secure a stout film of equal thickness; the prepared paper may be kept for months.

In producing positive pictures the collodio-chloride paper is printed under a negative, washed, toned in a sulphocyanide of gold bath (as with the Obernetter paper), and fixed. These are operations with which the majority of photographers are acquainted; it is not, however, the same with the method of transferring which M. Ost thus describes :—

The Transfer.

After the final washing, the prints, owing to the stoutness of the film. display a tendency to roll up, a feature decidedly unfavourable to the operation of transferring. This difficulty is easily overcome by drawing the prints, one by one, rapidly through warm water; they at once become flat, and remain so if subsequently placed in a dish of cold water, and the whole operation of thus treating several hundred prints necessitates a period of but a few minutes.

To transfer the image to glass or paper, the photograph is placed face downwards upon a sheet of so-called glass-paper,* and immersed for half a minute in lukewarm water; by these means the collodion film, carrying with it the image, becomes separated with the greatest ease from its original support. The glass-paper bearing the collodion film is placed upon a large glass plate, and any gelatine still attaching to the film removed by means of a flat camel-hair brush and warm water; this operation is finished in a couple of seconds, and the film is then ready for final transfer. For this purpose cardboard coated with shellac is most appropriate, as the finished print thus acquires a more brilliant appearance; a sheet of this material is placed upon a piece of clean blotting-paper, and a teaspoonful of a thin boiled solution of gelatine† poured over it. The film and its support are then placed, face downwards, upon the surface of gelatine, a broad camel-hair brush is drawn backwards and forwards upon the back of the glass-paper to press out the superfluous gelatine, and the paper afterwards carefully lifted off by means of one of its corners. The collodion picture now rests upon the cardboard, and the slight creases still remaining in the film disappear upon its becoming perfectly dry. To effect this, the pictures are laid upon large sheets of paper previously impregnated with a hot composition made by mixing together equal proportions of lard and wax, so that no fear need be entertained of superfluous gelatine causing the margins of the cardboard to adhere to the surface on which they are placed. Greased sheets prepared in this manner may be preserved for any length of time.

The transfer of photographs to glass is proceeded with in like manner, excepting that a glass surface is employed, and vigorously printed proofs selected for the purpose. Care must be exercised, during the operation of transfer, to prevent the formation of air-bubbles between the collodion film and its support; after a little practice sufficient skill will be acquired to overcome any difficulties of this kind which may be experienced, either in the application of the film, or its subsequent treatment with the camel-hair brush.

It should be mentioned that, during the tranfer, a supply of warm water must be always ready at hand, an arrangement of the following kind being very desirable :—On the work-table is placed an iron tripod, about three inches in height, on which stands an enamel-lined saucepan; the latter has a diameter of nine or ten inches, and is about three inches deep. It is filled half full of water, which is kept warm by means of a spirit-lamp, and is used for the purposes of removing and cleaning the film from gelatine, of moistening and warming the brush, and likewise of heating the gelatine.

Transferring upon Oval and Round Porcelain Plates.

The transfer of pictures to porcelain differs from the former manipulations in the description of the cementing material used, which, in this instance, is not gelatine, but copal varnish.

To effect a transfer upon porcelain or enamel, the picture must, in the first instance, be cut down until it is about a quarter of an inch larger on every side than the plate; it is then laid, as previously described, face downwards upon glass-paper, and freed from gelatine and paper by means of warm water. The edges and surface of the porcelain plate are then coated with a light copal varnish, much diluted with chloroform, in the proportion of 1 part of copal varnish to 5 or 6 parts of chloroform. The varnish thus prepared must be preserved in a well-corked bottle, small quantities only being withdrawn at a time, as the chloroform is a very volatile liquid.

The varnish is applied very sparingly, by means of a half-filled brush, in rapid and regular strokes, and the plate then placed in a convenient position at the edge of the work-table; the photographic film, resting upon the glass-paper, is clapped downwards upon the plate, and its edges pressed round the margins of the porcelain, attention being paid to the prevention and remedying of creases forming in the film. Any imperfections of this kind may also be subsequently removed by rubbing over with a tuft of fine cotton wool.

It is not to be denied that the production of medallions by means of transferring with copal varnish requires the possession of a certain amount of skill, and, at the commencement of operations, therefore, mishaps may not unfrequently occur; at the same time, when the difficulties are once overcome, the work may be conducted with rapidity, and without drawbacks. I have been able to transfer as many as forty medallions in the space of an hour, without experiencing one single failure.

On the spoilt plates the collodion film will be found to adhere very firmly to the porcelain, and extremely difficult to remove; they are best cleaned by immersion for a night in caustic potash. Only upon such articles around the edges of which the collodion film can be thrown are transfers possible, as otherwise the varnish has a tendency to draw up the film, and to render it shrivelled and full of creases. Vases, cups, goblets, glasses, bottles, &c., which are in frequent use and often cleansed with water, must not be treated with gelatine, as the same is easily soluble in water; for articles of this description an insoluble transfer is most simply produced by employing albumen (white of egg) as a cementing material. The white of egg is beaten up into a froth, and allowed to subside; the fluid portion of the same is then separated and used in the same way as the gelatine, and upon this the collodion film will be found to adhere very firmly. Finally, the objects bearing the photographs are heated to a temperature of 70° R. (about 190° Fah.),

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* This glass-paper is simply paper coated with a film of good copa varnish, which imparts a glassy transparency to the surface.

† The proportions of the gelatine solution are :—

Fine gelatine	½ ounce
Water	12½ ounces.

an operation which coagulates the albumen, and renders it perfectly insoluble in water.

To prepare collodion paper, the collodio-chloride is applied to paper coated with sulphate of baryta, and afterwards immersed in silver solution.

The multiplication of negatives by means of the collodio-chloride is conducted in the same manner as that described by Obernetter. Glass plates are coated with clear, subsided white of egg, and dried; upon this the collodio-chloride is poured, and, when perfectly dry, exposed to light in a printing-frame, washed, toned with Rhodan gold, fixed, and washed. For the formulæ used in compounding the different kinds of solutions, and other specialities in manipulation, we must refer our readers to M. Ost's Circular.

From the above remarks of Dr. Vogel we may infer, therefore, that a perusal of the Ost pamphlet has impressed him with a favourable idea of its merits.

SPIRIT PHOTOGRAPHS, AND MODES OF PRODUCING THEM.

The impudent hoax of pretending to produce photographs of the disembodied spirits of the dead seems to have excited an amount of interest amongst our transatlantic friends altogether disproportioned to the occasion. A trick so easy to enact should not have excited more wonder than the sleight-of-hand effects of the commonest street juggler. The imposture has appealed, however, to the domestic feelings and credulity of an impulsive people, and so acquired some interest, and the recent failure to convict the photographer Mumler has endowed the matter with factitious importance. The daily press of America has made the matter the subject of leaders, and our photographic contemporaries are rife with allusions to the subject, and methods of producing the results. Although the art of producing secondary imperfect images, mixed up with the portraits intended, is not a very valuable one, a knowledge of some of the methods may be useful, as suggesting what to avoid. Dr. Woodward, writing to our Philadelphia contemporary, says:—

"The trial in the case of the so-called spiritual photographic swindle in New York City is creating a great excitement through the whole country. I have read the testimony of the witnesses thus far, and have not yet, in all the processes given, for taking ghosts, seen the one which I consider the one practised by the defendant, although the processes given will undoubtedly produce ghosts as stated. I have been in the habit of taking ghost pictures for my own amusement, by a process in which the deception is complete. It is this:—

"1. Select a transparent and colourless plate of glass, containing considerable alkali in its composition.

"2. Place this plate in a rather strong solution of caustic potassa for a few hours.

"3. Clean the plate perfectly with water and rottenstone.

"4. Select an adhesive collodion, and take a negative in the ordinary way, on this plate, of some one whom you wish to appear as a ghost. In finishing, dry it very thoroughly, using sufficient heat to make it quite hot. Omit varnishing. (The person to appear as the ghost may be dressed in a shroud or in ordinary apparel, and may be taken in full or in part by proper vignetting appliances).

"5. Remove this negative picture by scouring with rottenstone and water until the plate is apparently perfectly clean, and store away for future use, after marking the side on which the picture has been taken.

"6. Take a picture yourself (or hand this plate over to any photographer, and allow him to take a picture) in the ordinary way, of any one you please, on the side thus prepared; on development the last picture will come out very distinct, while the former will appear as the ghost.

"The theory of this process is this:—

"The kind of glass selected is attacked and etched very slightly by the potassa solution, so that in making the first picture (ghost) the coating of collodion and iodide of silver, after drying, adheres with such tenacity to the granular surface of the plate that no ordinary amount of scouring will completely remove the silver compound, although the plate appears to be perfectly clean and transparent. It is this invisible coating that gives the ghost, while the collodion and silver last applied give the ordinary picture. Old plates steeped in strong nitric acid for a few hours, so as to dissolve away every trace of the former silver coating, fail to give ghosts."

The respectable members of the photographic profession, in New York especially, are naturally very indignant at the abuse of their art and the escape of the impostor. Some of them undertook to produce the so-called spirit photographs under the closest inspection, without the immediate means being detected, even by those who were aware that the trick was intended. The Photographic Section of the American Institute has passed a resolution condemning the trick, and expressing surprise at the decision of the magistrate.

PINHOLES.

BY M. CAREY LEA.*

Pinholes in Dry Plates—Explanation of their Production.

Although pinholes are not as common with dry plates as with wet, they not unfrequently make their appearance, at least in some processes. As the same causes that lead to them in wet plates do not operate with the dry, the whole matter has led to much speculation and inquiry. In fact, as in almost all the dry processes in common use, the bath solution is washed off the plate, there is no opportunity for the production of crystals of iodo-nitrate of silver. Whence, then, does the trouble come?

In the collodio-bromide process which I have published, I have never seen pinholes occur. But latterly, in a very wide series of experiments in which I have been engaged, I have occasionally seen them, and was thus led to study their cause, which I have made out without much difficulty. They are caused by crystallization of the so-called preservative solution upon the plate.

Microscopic examination of these pinholes has shown me that they differ altogether with different preservatives, but with any one preservative the form is regular and characteristic. With one preservative, for example, the pinholes are elongated, and a microscope shows them to have the form of short prisms. In another case they will seem to be round; the microscope will, perhaps, show these to be, in reality, corresponding with the forms of groups of small crystals. In some cases, what appeared to the eye to be circular, is found, under the microscope, to have numbers of small points around its circumference, proving that it was caused by a cluster of small crystals, overlapping everywhere but at the circumference, where the crystals separated, and each exhibited its own characteristic termination

These crystals, of course, were formed during the drying of the plate. The preservatives did not all dry, as intended, in the body of the film, but a part outside of it. The crystals, of course, stopped the light precisely as in the case of iodo-nitrate crystals with wet plates, so that the fixing solution removed the silver from the film covered by the crystal, and a transparent spot was produced.

The remedy must be, always to check the tendency to crystallization, and this may be accomplished in three ways:—

1. By combining with the sensitizer substances that check crystallization; honey with tannin, for example. Sugar has also a tendency to prevent crystallization, and gum a very strong one.

2. By using less of the crystalline sensitizer. Tannin, for example, is a highly crystalline substance. In the form in

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* *Philadelphia Photographer.*

which it reaches the photographer, it is a mass of delicate crystals. If pinholes show themselves with tannin, the proportion used must be diminished. It does not, by any means, follow, that because one operator uses a 20-grain tannin solution without being troubled with pinholes, that another will have the same immunity. A great deal will depend upon the pyroxyline. The film and the crystalline substance represent two opposing forces. The latter strives to crystallize, which is opposed by the colloid character of the film. Which will obtain the mastery will depend, not only upon the quantity of the crystalline substance, but upon the cotton, and the quantity of it present. A thin collodion will leave much less pyroxyline on the plate, and the tendency to crystallize will be proportionately greater.

3. Another mode of avoiding pinholes will be to avoid crystalline substances as preservatives. Coffee, for example, and albumen, do not tend to crystallize, but dry up to what is technically called a varnish; that is, a colloid mass perfectly homogeneous. Such preservatives cannot produce pinholes; or, if pinholes show themselves with these preservatives, they must depend upon some sort or other of bad manipulation, most probably dust settling on them during drying.

I have before spoken of the favourable action of sugar in keeping open the pores of dry plates; its tendency to prevent pinholes must also be classed amongst its good qualities; both of these are shared by gum, a substance which is destined, for many reasons, to be of the greatest value to the worker in dry plates.

Wet Plates.

The subject of pinholes in wet plates has been so much better studied than the foregoing, that there is but little that need be said on the subject. Want of filtration is a not uncommon cause; the motes floating in the bath rest upon the film, shelter it from the light, are removed in washing, and the unexposed iodide and bromide of silver underneath are dissolved out in fixing, and leave a transparent spot in the lights or the half tones. I do not know whether it has been before remarked in print, although every photographer must have observed, how much more apt these transparent spots are to come in the sky than elsewhere. The reason is not difficult to find. The part of the plate that receives the foreground is that which comes first out of the bath and remains uppermost in the draining, so that specks and motes naturally are carried by the descending fluid into the lower part of the plate, which is to receive the image of the sky.

Just in the same way operates the iodo-nitrate of silver, except that these crystals may not only be deposited on, but may form in, the film.

In this case, the preference which these crystals also show for the sky admits of a different explanation.

The bath solution continues to settle down the plate after draining, and whilst the plate is in the slide. As evaporation goes on simultaneously, the solution on the lower part of the plate will always be more strongly charged with silver salts, and, if the delay is long, the difference may be considerable. Of course, the opportunity for the formation of the iodo-nitrate crystals increases with the concentration of the fluid.

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ON EXPOSURE.

BY O. R. GREEN.*

In the absence of a paper on exposure by one who has had much practical experience of it in connection with the collodio-bromide process, I have penned a few observations which may interest our members, and, perhaps, draw the attention of some to a branch of our art-science to which little attention has been given by our Association.

In the first place, I propose to consider what we mean by exposure; next, what is the effect produced by the light; and then consider the reasons there are for believing that exposure may be almost indefinitely shortened.

What we mean by exposure is, allowing the actinism of light to have access to the chemicals in the prepared film; and this leads us to inquire, What is actinism, which produces the wonderful changes with the effects of which we are so familiar? How is the change produced, and what is the nature of the change? Actinism is a term generally used to express that peculiar property the rays of light have for producing chemical changes; but I would give it a wider meaning, and consider it to be the property which light has of producing physical as well as chemical changes.

In the prepared film we have certain chemical compounds consisting of atoms or molecules, held together by their inherent attractive force. After the film has been exposed to light for the usual time in the camera, no chemical change can be detected to have taken place in the chemicals; all the silver is still found to be in combination with the other elements as before exposure. What, then, is the nature of the change, if it be not chemical? I am disposed to think the change in the film consists of a kind of polarization of the molecular elements forming the chemicals. I think this change is brought about by the impact of the actinic waves of light, which produce the power called repulsion, the effect being to cause polarization and consequent vibration of the molecules, which weakens, but does not liberate, the attractive force existing among the atoms of the chemicals. The molecules of the chemicals in the developer are then enabled, by their inherent attractive force, to form new compounds, which, otherwise, they would not be able to effect.

These ideas will be better understood if I condense, from Winslow's admirable work on "Force and Nature," the effect of a blow of a hammer upon a rod of iron or hard steel held in the line of the magnetic dip. The impact communicates the force existing in the falling body to the body struck, which, propagating itself from molecule to molecule, is counteracted in turn by the repulsive force of the same molecules. Thus vibrations—that is, molecular motions—ensue, and the iron becomes magnetized, one end being positive, the other negative. If the iron be allowed to rest, it gradually loses its magnetic power, and returns to its normal condition.

I do not say that the change which takes place in the chemicals is magnetic; but I think the same force—that is, repulsive force—which, acting in the iron, produces the effect called magnetism, may be generated in the chemicals by actinism, and cause vibration of the molecules, and so counteract or lessen, to some extent, the attractive force by which they exist.

It is a law in nature for all things to return to their normal condition after being disturbed, and, consequently, we find, after exposure, the film gradually loses the latent image; or, in other words, the molecules of the chemicals lose their newly-acquired power, and, like the molecules of the iron, slowly, but certainly, return to their normal state. Some chemicals may, and doubtless do, retain the effect of actinism longer than others, and some preservatives, by their presence, assist the chemicals in retaining the effects of light longer than others. The reasons why these chemicals possess these varying properties possess much interest, and deserve the closest investigation.

The certain tendency which the exposed chemicals have to return to their original condition explains the reason there is for prolonging the exposure of the plates if we wish them to retain the latent picture for a long time before being developed, and also the necessity of developing immediately if we desire to reduce the exposure to a minimum; and I may add that, if at any time you should make a tour with dry plates, and returning home find, on developing one or two, that they are much over-exposed, if you keep the others a few weeks before applying the developer you will get better results than you otherwise would.

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* Read at a meeting of the Liverpool Amateur Photographic Association, May 25, 1869.

It may be interesting here to enquire, Why do certain of the rays of the spectrum produce actinic effect on the iodide of silver? Why do other rays, in addition to these, have an effect on the bromide of silver? And why do other rays of the spectrum produce no effect on either? At first sight these questions seem difficult to answer, but I think we may get a little insight into the cause, if we study the action of the waves of sound, which, in some respects, behave like the waves of light. Professor Tyndall states, in his beautiful description of singing flames, that if a silent flame of gas be burning in a glass tube, and sounds be produced upon a syren, ascending gradually from the lowest note of the instrument, at the moment the sound reaches the pitch of the tube surrounding the flame the latter stretches itself and commences to sing, and will continue to do so indefinitely after the syren has ceased to sound. By varying the length of the tube we vary the note produced, but the voice or sound must be modified accordingly. A difference of half a tone between two tuning-forks is sufficient to cause one of these to set the flame singing, while the other is powerless to produce this effect.

Now, if we look at the various waves of the spectrum, consisting, as they do, of many varying waves of light, the waves of different colours being different—red, the largest, numbering 40,000 to the inch, the yellow, green, blue, indigo, and violet gradually decreasing until of the smallest (*i.e.*, the violet) there are 60,000 in a lineal inch—and then consider that the molecules of the chemical elements against which, by exposure, we bring them to act must be of various sizes, and, probably, of various shapes, it will not seem surprising that some only of the waves of light should cause the molecules of some chemicals to vibrate, and that the molecules of other chemicals only vibrate to other waves; and, still further, it will not be surprising that the chemicals which we have been in the habit of using for the smaller waves should be insensitive to the large waves emanating from the other extreme of the spectrum. If, by investigation, we can find chemicals in the molecules of which repulsion can be quickly brought into action by the waves emanating from a greater portion of the spectrum, we shall probably gain rapidity, shorten exposure, and produce more truthful pictures. I consider the bromide of silver to be more sensitive than the iodide, in consequence of more of the rays of the spectrum acting on the former than on the latter.

Let us now consider whether theory gives us further reasons to hope that films may be made more sensitive, and exposure abbreviated. For many years beautiful photographs, called "instantaneous," have been produced under favourable conditions of light; but no progress has been made of late in this direction, the cause of which I think is that scientific gentlemen who have the ability, means, and leisure, are not now applying themselves with that ardour to the subject which they did when photography possessed the charms of infancy. This is much to be regretted; for, when we look at some of the beautiful little instantaneous productions of Wilson and others, we feel a longing to produce large photographs possessing the same qualities, and experience regret that our present knowledge does not enable us to do so with facility. We cannot avoid experiencing the same feeling when we look at a rapidly-executed miniature portrait. Light travels at the rate of 198,000 miles in a second, and, as I have explained before, there are from 40,000 to 60,000 waves in every inch; and when we think of the rapidity with which objects are pictured on the brain, and compare it with the time of exposure required to take an ordinary photograph, it will be seen that the impact of fewer waves are required to cause the molecules of matter forming the brain and nerves to vibrate than are required to give a similar impulse to the molecules in the prepared film. Every wave, doubtless, is capable of doing a certain amount of work, and it follows that, if we can get chemicals in which the molecules have less mutual attraction, we shall be able to do with fewer waves, as less repulsive force will be required; and it is possible we may gain rapidity if we can find chemicals to act as sensitizers which possess greater power in overcoming the inherent attraction of the salts in the film than those hitherto employed for that purpose.

I can see no reason why photographs should not be taken in ordinary light with the rapidity of sight or thought, as these senses are due to the action of the same forces; and depend upon it that Dame Nature will bestow upon her scientific children the family receipt if they will but persevere in importuning her sufficiently.

I think I have now said sufficient to encourage the experimentalist; so, with a few practical remarks on exposure in the field, I will bring the subject for the present to a close.

No definite rule as regards time can be laid down for exposure. I advise every person to adopt some ideal standard of sensitiveness. Most persons who have worked with wet plates adopt the exposure required for them as the standard. If it be wished to try the relative rapidity of plates differently prepared, I think it is better done by using a carrier in a large camera, so that the plates can be placed side by side. If the camera be then pointed at a subject equally illuminated, you will be certain they will receive the same exposure, and can judge of the relative merits of the plates accordingly. It was in this way that I became convinced of the rapidity of the collodio-bromide plates, which, if developed within a week, require about three times the length of exposure I should give for wet plates; but, if I thought of keeping them a month or six weeks, I should expose for at least double the time, and so on for a longer period.

It is extremely difficult to judge of the exact amount of light reflected from a landscape—say, on two similar cloudless days at the same hour—so much depends upon the amount of invisible aqueous vapour in the atmosphere, which reflects the light into the shadows. I think the best plan is to notice the amount of illumination in the shadows of the picture on the ground glass, and judge of the exposure required accordingly. I find the eye is better able to form a correct judgment in this way than by looking at the landscape direct. If you wish to avoid having dark patches in your pictures, take care of the shadows and leave the lights to take care of themselves till you use the developer. Err on the side of over-exposure rather than on the opposite. You may, to a certain extent, correct the former by after treatment, but no skill will compensate for insufficient exposure.

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ON THE BLISTERING OF ALBUMEN PRINTS.

BY JOHN M. BLAKE.*

I have not seen an entirely satisfactory explanation of this phenomenon. It has been attributed to the fact that the fresh water in which the prints are washed after fixing tends to flow more rapidly in through the paper and albumen surfaces than the dense solution of hyposulphite of soda does to flow outward. It is said that this action—called osmose—causes a separation of the albumen film from the paper when the adhesion of the two is not sufficiently perfect, forming blisters by the accumulation of liquid between the two surfaces.

Now, it must have been observed by many that the blisters contain air, not water. They occur at times, and then again one has no trouble from them, although the prints may apparently receive the same treatment. When they form, there is a separation of air from the water. This soon floats the prints to the surface, and, on stirring, bubbles will be seen to escape from among them. The air which thus separates was at first dissolved in the water. This supersaturation of water with air may be due to the water having been under pressure in contact with air, or to the fact of the water having stood for some time at a lower temperature than that of the room in which the prints are washed. The latter would happen most frequently in winter.

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* *Philadelphia Photographer.*

D. Welch, a correspondent of the Photographic News, February, 1869, mentions a difficulty occurring during fixing, due to the separation of air-bubbles from the hypo, causing yellow spots when suffered to remain between the prints. He remarks that he has only been seriously troubled in this way in winter. He says:—"They have entirely disappeared since I adopted the plan of lifting the prints carefully from the water after toning, and dipping one corner into the fixing solution, and allowing the print to slide gently down into the solution face downwards.

Although this does not refer to blistering, it confirms my observation of the more frequent occurrence of super-saturation of water with air in the winter.

Several unsuccessful experiments were made to produce water blisters. Since osmose is most violent at a high temperature, some prints were taken from the fixing bath and immersed in water just before it had been brought to the boiling point. These were soon covered with numerous small blisters containing air, while upon others, placed in a fresh portion of water after it had boiled for some time, and had been removed from the source of heat, no blisters could be detected.

Water holds in solution one-sixtieth of its bulk of air at a temperature of 60° Fahrenheit. Cold water dissolves a small fraction in addition. This separates slowly when the temperature rises, as would happen if it stood in a warm room. A still larger portion—that is, the whole amount—separates on boiling, and prints thrown in when ebullition first commences would be subjected to the most favourable conditions for the formation of air-blisters. On the contrary, after water has been boiled, it has parted with the air which was previously dissolved in it, and, as the temperature falls, it commences to dissolve air. At this time no air-blisters can form.

We may consider the diffusion of water and hyposulphite of soda solution as the pre-disposing cause of air-blisters, since they do not form when washing the prints before fixing. But this diffusion alone does not account for blisters, as the following experiment shows:—Some prints were taken from the fixing bath, and washed slowly at first, to avoid the more violent action of osmose, and then the washing was continued, with frequent changes of water, for twelve hours. At this time there were no blisters upon them. The hypo was, of course, reduced to an exceedingly small quantity, and could not influence the formation of blisters if the washing was continued; but when these prints were put into water evolving air, blisters formed upon them with as much facility as upon prints just from the fixing bath. This fact proves the insufficiency of the theory heretofore proposed, to account for the blistering of albumen prints.

But we need not conclude from this that some of the plans that have been proposed to prevent their development are of no value. It was the impression, after a number of experiments made by first immersing the prints in hot water, free from air, that however safe this might be if followed up by washing in water fit for the purpose, it increased the chances of destructive blistering above that with slowly washed prints, when water containing an excess of air was used for removing the last traces of hypo. We may suppose that the albumen is loosened, as it were, by the previous treatment with hypo followed by water, and that the air has a chance to operate, as will be explained.

If we watch the separation of air from water in a glass vessel, we will observe that the small bubbles which first form on its sides gradually increase in size, and this without uniting with other small bubbles. In fact, the dissolved air is transferred through the water by the force of diffusion, and does not actually separate in the gaseous form until it comes in contact with the surface of a bubble adhering to some object in contact with the water. We have the same action during the process of crystallization. An element, or number of elements which have a tendency to separate and form a solid, are transferred through the liquid until they come in contact with a growing crystal, then separation takes place, and the solid is formed. There is a difficulty in starting the first crystal, often strikingly manifested in certain solutions; but a crystal once started, the deposit goes steadily forward.

Let us go a step further, and suppose a bubble has started under the film of albumen. The same action could still go on through this film, the air in solution passing through it by osmose, where, if it were not in solution, it could not penetrate. A sharp bend in the paper often appears to start a blister, probably by introducing a particle of air under the albumen film. They are sometimes an inch across, and may contain a half fluid drachm of air. The print is then strangely drawn up and spoiled.

If we can, by some means, remove the excess of air which the water contains, above the normal amount, we can thus avoid the formation of blisters. There are two means of depriving water of air: by removing the atmospheric pressure, and by boiling. A portion of water so treated might be added to water containing an excess of air, in such proportion as to leave the mixture simply saturated, and thus the end we desire be attained, without the necessity of subjecting the whole bulk of water to the same treatment. It takes several hours for the air to separate from a half pint of water drawn into a glass, and left standing in the room. It would probably take much longer, in case of a larger bulk, unless some objects presenting a large surface were immersed in it, upon which the bubbles might form and separate. It would be inconvenient, in many cases, to depend upon allowing the water to stand, before use, in a tank in a warm room, for a sufficient length of time for this separation to occur. A plan which I have tried as an experiment may be of use where it can be conveniently applied. An inverted two-quart bottle was elevated to the upper part of the room. It had two tubes connected with it. The delivery tube opened at the upper part of the bottle, the other below. The latter was connected with the water pipes, and the flow into the bottle regulated by the cock at the pipes. The exit tube was made small, and was extended out the window, down, in all, twenty-seven feet. The effect of this arrangement, when the flow was properly regulated, was to partly remove the atmospheric pressure from the water in the bottle, and to cause the dissolved air to separate rapidly. This was made evident in the following way: If the flow into the bottle was stopped for a few seconds, to allow the bubbles to rise and the water to become clear, a fresh supply let in made the water in the bottle at once milky with the separating bubbles of air, and the water cleared quickly as they rose and broke with a hissing sound at the surface. Although effective in removing air, when delivering a small stream of water, it failed to be so when the supply was increased beyond a certain point. The delivery tube must be made less than one-quarter of an inch in interior diameter, so that the bubbles of air will be carried down the tube with the water, and not allow the water to flow past them, for this would soon destroy the proper action of the apparatus. For this reason it would be necessary to have two or more delivery tubes for a liberal supply. Increasing the size of the reservoir above would allow a given portion of water a longer time to part with its air. This would be advisable where circumstances require the perpendicular height of the delivery tube to be less than given above. In case one has sufficient pressure to admit of running a pipe up into the upper part of the building, and from this point there is a descent of forty or more feet to the washing tank, it is probable that no upper reservoir would be required. It will need a descent of considerably more than thirty-three feet to entirely remove the atmospheric pressure, for the greatly distended bubbles of separated air in the upper part of the tube occupy a good portion of its length. But there is no object in removing all the air, and we need not aim to do this. If the exit tube dips into the water in the washing tank, the separated air will be forced down and escape from it. This air cannot cause blisters. It is only the excess of dissolved air that is to be avoided. To ascertain if the apparatus is effective, or if a given sample of water is to be tested, the water can be drawn into a glass, and, should no bubbles form on its sides in the course of half an hour, it is evidence that no blisters will result from its use: possibly longer, under certain conditions. At a time when blisters formed rapidly, it was noticed that the water immediately, on being drawn from the pipes, showed an effervescence, and a few minutes sufficed to line the interior surface of the vessel with bubbles, causing the glass to give out a dull sound when struck with the finger.

A quantity of prints which had been partly washed, and had a few blisters upon them, were dried, and the blisters carefully marked. They were again washed for twelve hours in water that would have ruined prints under other circumstances, but no blisters were formed, with the exception of the re-inflation of the old ones. This shows that the union between the paper and albumen had been re-established by drying. This theory is supported by the fact of the close adhesion of the albumen surface of a print to a glass or other surface when dried in contact with it. Advantage may be taken of this circumstance, since the final washings can be made with any water if this adhesion to the paper is secured. What effect this drying would have on the removal of the last traces of hyposulphite of soda afterwards—whether to shorten the whole time of washing, or to lessen the chance of removing all substances liable to cause fading in the print—is a subject for investigation.

The water used in these experiments was drawn from a tank located in a colder room. This was occasionally filled from the city pipes. A glass of water dipped from the tank, and another drawn from the pipes as usual, showed no difference in the amount of separated air adhering to the sides after standing in a warm room.

Water-blisters form under collodion films on glass. It was suspected that blisters forming on a certain preparation of gum dry plates, when wet with water after exposure, were due to air contained in the water. This was not the case, for they were produced by the application of water entirely freed from air, and, on puncture, only liquid escaped from them. They must have been caused by osmose, due to the sugar added to the gum. The explanation of blistering heretofore given fully accounts for their formation.

Correspondence.

FIXING RETOUCHING: REWARDS FOR IMPROVEMENTS.—SULPHUR TONING.—AMMONIA FUMING.

Sir,—I notice in the Year-Book of 1869 a contribution in which mention is made of varnished films retouched in pencil, and the means of securing the retouching. Is not the author aware that the vapour of alcohol will fix such retouching without in the least impairing the brilliancy of the varnish? In practice I put a little alcohol in a saucer, which I place on a hot iron plate, and hold the negative over it a few seconds.

The many valuable contributions to our photographic knowledge which have been furnished from time to time in the News suggests to me a plan for increasing and rewarding such offerings to the general stock. It is, to form by subscription a fund for awarding prizes for such improvements, mechanical, manipulatory, or in any other way practical and available to photographers, which may be communicated through the columns of the News, and not patented or registered, a committee being composed of members of the various photographic societies under the presidency of the Editor of the News.

If the suggestion takes, I will forward my subscription of one guinea, to prove my recognition of past advantages and faith in those to come.

Can you tell me the rationale of the tone of the enclosed photograph? It was toned in a carbonate of soda bath, but the colour not proving satisfactory on fixing, it was washed in two or three waters from the hyposulphite, and then toned in a sulphocyanide bath until the desired black was arrived at, when it was fixed anew, and thrown into the washing-pan for the night, the present colour obtaining before morning. From a number of proofs toned with this I gather that any tone of warmth may be obtained by more or less complete washing from the hyposulphite previous to putting into the sulphocyanide bath.

Do any of your readers tone with the sulphocyanide bath after fixing? I have obtained from over-printed proofs very pleasant tones in this way.—Yours truly,

Athens, May 22nd. W. J. Stillman.

PS.—The question of ammonia fuming and its effect on negatives is of great importance if such danger arise as the members of the French Society seem to apprehend. I think it will be found that by properly fuming the paper and then exposing it to the air in the dark, the free ammonia is dissipated, and that no effect will be produced on the film. At least, I have never found any, though I utterly destroyed a film by the use of a pad dampened slightly with ammonia. I believe that the whole danger lies in the free ammonia contained in the pad, and which is not, I believe, necessary to the desired effect.

[The suggestion of our correspondent as to a system of rewards for communicating valuable hints is one upon which we shall be glad to learn the views of our readers. The tone of the print mentioned is just the pale yellowish brown tint in the lights, characteristic of the old form of toning bath, and is undoubtedly the result of sulphur liberated by the decomposition of the hyposulphite in the print when it was toned again in a bath of gold and sulphocyanide. The suggestion as to the mode of using ammonia fuming is well worthy attention.—Ed.]

INDIA-RUBBER FUNNELS, ETC.

My Dear Sir,—Allow me to amend an expression you inadvertently used in last week's News in your notice of my rubber funnel:—

The joints are *not cemented—i.e.*, moistened with a solvent—but simply cut with a clean, sharp, large pair of scissors, the old practice in laboratories, as you well know. A solution of rubber may, however, be employed as a last resource if the newly-cut edges have not immediately closed, and dust, &c., covered them. I may further remark, that a "disabled" tobacco-pouch will furnish three funnels, the two flaps one funnel each, and the back a third, a much larger one. A half circular flap is severed and doubled, so that the one edge projects about three quarters of an inch beyond the other. The two edges are cut off together as described above, and the cup is finished. The cut-off piece, again, is doubled, and its two sides trimmed off; and now the conical stem is also finished. Then this stem is pushed through the aperture of the cup till it fits tightly, and a circular cut is made through the four layers. The trimmings are removed carefully without fingering the newly-cut edges; the stem is then brought in contact with the cup, slightly pressed to it, and the funnel is finished.

In my last funnel I cemented outside of the stem, on two opposite sides, strips of rubber, reaching up to about half an inch over the cup, to allow a passage for air when the funnel is inserted into the neck of a bottle, which the yielding rubber is liable to close hermetically.

This naturally leads me to the subject of Mr. Spiller's remarks on rubber. I cannot help thinking that there is something wrong in our treatment of that substance when employed as a cement for mounting. A piece of native rubber (a piece of bottle), however old, however much discoloured by oxidation (I have some by me upwards of thirty years old), does not show any sign of friability. It must be, then, the solvent which imparts to it the quality to "perish everlastingly." But then, again, how is it that all the macintosh goods—another instance of mounting with rubber cement—preserve their integrity? I have an air bed, an air cushion, &c., some twenty years old. They are as pliable as they were when new, and I have never known an instance of the two tissues separating. Have, then, the Macintosh Company any trade secret? Once more, I am in possession of some vulcanized rubber tubing of French manufacture, about eighteen years old, perfectly pliable. Our English tubing will not compare with it. Is here, again, a trade secret at work?—Yours very truly, Ennel.

PHOTOGRAPHIC EXHIBITION IN THE NETHERLANDS.

Sir,—In the Photographic News of 28th May I find an insertion concerning the exhibition of photography in Groningen.

In this insertion you mention that English exhibitors can have their contributions forwarded without cost or trouble. I beg to inform you that this is a mistake as regards cost, as paragraph No. 7 of the programme says that exhibitors must send their objects "carriage paid" to the committee in Groningen.

Being authorised by the committee to receive, forward, and return the goods, there will surely be a great deal of expense saved to the exhibitors, instead of each of them sending their goods separately. As to trouble, they will be quite free, shipments being done by me.

As the mistake has led already to misunderstandings, I should feel obliged if you kindly would redress this in your next number.—I remain, sir, yours obedient,

A. D. Keulemans.

1, *Guildhall Chambers, Basinghall Street, June* 1*st*, 1869.

[We have pleasure in giving publicity to Mr. Keulemans' letter; the error in the announcement we published did not rest with us, as we published the conditions exactly as we received them.—Ed.]

Proceedings of Societies.

Edinburgh Photographic Society.

This Society held its thirteenth meeting for the session on Wednesday evening, in the hall, 5, St. Andrew Square, Mr. J. G. Tunny, Vice-President, in the chair. After the reading of the minutes,

A paper was read by the Hon. Secretary, Mr. W. H. Davies, "On a New Method of Preparing any kind of Paper or other Surface for receiving a Photographic Image," which was fully illustrated by a number of pictures on various likely and unlikely specimens of paper, including common wrapping, packing, and printing papers.

In the course of the discussion which ensued, several members expressed their opinion that the new process was admirably suited for the requirements of that very wide class of photographic proofs which required to be enlarged from smaller pictures, as well as those which were to be on plain paper.

Mr. John Nicol then read a paper "On the Velocipede as an Adjunct to the Practice of Landscape Photography."

The evening's business was concluded by the exhibition of a large number of very fine enamel pictures by Mr. A. L. Henderson, of London. The examples shown combined the durability and unchangeability of the old Limoges and other enamels with the minuteness and finish of the best photography.

Mr. Warlick also exhibited a number of specimens of colouring which were much admired.

Bristol Photographic Society.

On May 27, being the fourth Thursday in the month, the Society met at the Philosophic Institution, Mr. Ennel in the chair.

The Secretary having read the minutes of the last meeting, which were confirmed,

The Chairman announced that his Lordship the Bishop of Gloucester and Bristol had accepted the "titular, not the co-operative," Presidentship of the Society, which announcement was received with acclamation.

The following gentlemen were then duly elected members of the Society:—Mr. Gillo (of Bridgewater), Mr. Henry Husbands, Mr. John Hill Morgan, Dr. Augustin Pritchard, and the Rev. Robert Whiting.

Mr. Dunmore, of Chepstow, exhibited, by an oxy-calcium lantern, a great number of dissolving views, mostly photographic transparencies of local and general interest. Many were very fine indeed, and duly appreciated. Besides Mr. D.'s own slides, several others were lent for the occasion by the Secretary, by Mr. Allis (an excellent amateur), and by the firm of Messrs. Husbands and Clark, opticians, Bristol. The lantern, W. W. Rouch's make, and the oxy-calcium light, worked without a hitch.

A great many ladies having graced the meeting with their presence, Mr. D. was carried away by their frequent applause, and made the exhibition rather entertaining than instructive, so that there was no time left for discussion or conversation.

The Chairman briefly pointed out the great expenditure of time and labour required in the mere preparation for an exhibition of that kind, but particularly in the case of Mr. D., who came from a distance; and a very hearty vote of thanks was given to Mr. Dunmore.

The announcement, from the chair, of the promise of a paper for next month, by Mr. John Beattie, V.P., on "Printing, with Special Reference to Carbon Printing," brought the meeting to a close.

Talk in the Studio.

United States National Photographic Association.—At the first annual of this association, announced to take place in Boston on the 1st of June, besides an exhibition of photographs, lectures will be delivered by Dr. J. F. Boynton and Professor Towler. Subjects of general interest to the profession, it was announced, would also be brought forward for discussion.

Royal Cornwall Polytechnic Exhibition.—The opening of the exhibition in connection with the Cornwall Polytechnic Society is fixed this year for Friday, August 27th. Further details will be duly announced.

Demonstration of the Carbon Process.—At the next meeting of the Photographic Society, Mr. Johnson will give a demonstration of his new carbon process.

Negative Films Cracking.—A correspondent of the *Philadelphia Photographer* says:—"I notice that it is considered by some that the cracking of the negative film is caused by fixing with hypo. I have produced some two thousand negatives, the first half of which were fixed with cyanide, and the rest with hypo. Since I began the use of hypo, I have not had a cracked film (except in two cases, where the plates were subjected to extreme cold), and I think the reason why some negative films crack, that are fixed with hypo, is, because they have not been properly and fully washed. I use about three quarts of water to each negative, washing slowly and thoroughly. I attributed the cause of my negatives cracking, when they did, with cyanide fixing, to using too thick a varnish, which did not penetrate the film, but rather slid over it, whereas it should penetrate to the glass, and help to fasten the film firmly. Dearly as I love photography, I should hesitate to return to cyanide, for I am confident I felt the evil of its use before I laid it aside for hypo."

Coloured Negatives.—A very good intensifier for negatives may be made as follows:—Make a saturated solution of aniline orange, and negative varnish. Add sufficient of it to attain the density required, to the varnish when varnishing the plate. Very good printing density may be secured in this way, and the colour will not change in the sun.—*Ibid.*

Photographic Enterprize.—An individual out West gives a dozen card pictures and a full set of teeth for $22·50, says our Philadelphia contemporary.

Pearletta Portraits.—A new style of photograph has been introduced in America by Mrs. Hardinge, under the name of "pearletta pictures." The mode of working is to place upon an ordinary photographic print, on plain or albumen paper, a translucent film of white wax, pressed into contact with the print by hard rolling. The outlines of the print show through this film, and the hard effects, if any, are softened and subdued. The surface is said to be adapted to all kinds of colouring, stippling, hatching, &c., quite as much so as ground opal glass.

Streaks in Negatives.—Dr. Woodward says, in the *Philadelphia Photographer*: "I have noticed a cause of streaking on negatives which I have never seen in print. The spring on the door of the plate-holder is so shaped that the two ends which press on the back of the negative rest flat on the plate, so as to arrest the solution as it flows downwards, causing a thin stratum of fluid, from the two ends of the spring to the bottom of the plate. The reflection of light from this unequal distribution of the fluid causes the streaks. Remedy: bend the spring in such a curve that it will rest two points on the plate."

Coffee Process with Iron Development.—At the Photographic Section of the American Institute, Mr. Newton exhibited some very rapidly produced coffee negatives, part of the rapidity being due to the developer, which was as follows:—

Water	15 ounces
Gelatine	15 grains
Protosulphate of iron	1 ounce
Double sulphate of iron and ammonia	1 ,,
Glacial acetic acid	4 drachms
Tartaric acid	15 grains.

—*Philadelphia Photographer.*

Keeping Collodio-Bromide of Silver in Daylight.—At the above-mentioned meeting a curious circumstance was named. Mr. Chapman said that he had placed in a window a bottle of the collodio-bromide of silver solution, where it had remained the whole of one day, one half the time being exposed to full sunshine, and that upon its removal to the dark room, and flowing upon the plate, no difference in its working could be detected; it was as sensitive and good as other samples which had always been kept in the dark.

To Correspondents.

J. B. C. Fox.—Dr. Liesegang's papyroxyline is kept, we believe, by Hughes, Oxford Street, and Solomon, Red Lion Square. 2. Not having tried the sugar of milk, we can only accept the statement of its value on the recommendation of Mr. Newton, who is, we believe, a very careful experimentalist. The most rapid dry process which we know is the gum process of Mr. Gordon.

C. B. H.—Gallic acid solutions are best made fresh. 2. Paper salted with iodide and bromide of potassium, if preserved in a dry place, will keep almost indefinitely. The solutions of the salts will keep perfectly. 3. Negative collodions generally contain a little less bromide, and often a little more body, than positive collodions. 4. A good positive developer consists of 20 grains of protosulphate of iron, 20 minims of acetic acid, and 2 drops of nitric acid.

Venator.—The plan you mention, of employing a second fresh hypo solution to complete the fixing, ought to make assurance doubly sure of perfect fixation. 2. As a rule, a note addressed to the Secretary would ensure you admission. On this occasion you can make use of our name as a passport, if you wish to attend.

Z. A. M.—Mr. Gulliver, in recommending the printing-press as useful in a photographic establishment, did not mention any special place where it was procurable; but stated that the press he had used was called the "people's printing-press," and could be had of any type-founder. Mr. Gulliver's address is Swansea.

C. R. W.—The use of starch paste will not be attended with the trouble to which you refer, especially if it is made sufficiently thick. Glue is also free from any such objection. With glue, you must rub down the print at once; but, in using starch paste of proper thickness, and applying it properly to the print, a number can be mounted before rubbing down carefully. 2. It is not necessary to have any inscription on copyright pictures, stating that they are copyright or registered. It is safe to wait until the registration is acknowledged.

S. H. B.—If you use a copying camera for making the transparency, the best method of vignetting is, we think, that in which a piece of card, with suitable aperture, is placed outside the negative. The fact that a good deal of light is cut off is considered by some an advantage, since it ensures chiefly parallel rays passing perpendicularly through the negative; and length of exposure is not a serious difficulty in such a matter. 2. Opal pictures enlarged from ordinary negatives may be produced in precisely the same way as the transparencies for the Sarony pictures. If you develop with pyrogallic acid and acetic acid, you will be able to secure warmer tones.

C. E. F.—Soak an ounce of good glue in cold water, drain, and boil in a glue-pot. When melted, add an ounce of gum arabic dissolved in 6 or 8 ounces of water. It is used warm, as it will not remain in a liquid state.

T. H. Redin.—There is no English work devoted to instructions for printing on opal glass. The only instructions to which we can refer you are the various articles which have appeared in our pages. Besides the collodio-chloride process, the method by camera printing and development gives good results in careful hands. The instructions for producing eburneum pictures, in our last Volume, will apply largely to opal work.

An Old Indian Subscriber.—In your description of your operations, we see no error to account for your failure; and we can only advise you to adhere to a method with which you succeed, rather than persevere with one by which you have failed, from some cause not apparent on the surface. A printing bath is best neutral. M. Salomon uses the acetate toning bath, and obtains the rich, warm colours to which you refer. As much, however, is due to the excellence of his negatives as to anything else. Without a fine, vigorous negative, it is impossible to get good tones; with a really good negative, there is little danger of getting bad tones.

T. Pape.—Mr. Blair's Manual is intended to describe certain processes which have not yet been published. The price will be 2s. 6d. to subscribers. Mr. Blair's advertisement has already appeared in our pages. Send 2s. 6d. in stamps, and your address, to Mr. Wm. Blair, Rosewell Cottage, Bridgend, Perth. Apply for information as to the arrangements of the Autotype Company to the Secretary, No. 5, Haymarket.

F. S.—The proper mode of obtaining admission for a non-member to any special meeting of the Society is to write to the Secretary and obtain a note from him. If you attend, however, on this occasion, and use our name, we will arrange for your admission.

Done Brown.—To take combination pictures, first sketch your design, and then select models and scenes, negatives from which will furnish you materials for your picture. Read Mr. Cherrill's recent paper before the Society on the mode of combining in printing.

J. B.—Success in copying old oil paintings depends very much on experience, and the exercise of judgment cultivated by practice. Many articles have appeared on copying generally, but we do not remember that anything specific has been published as to the best treatment of old paintings. We can only give you advice in general terms. Use a fully bromized collodion and an iron developer; place the picture in a good light, expose fully, protecting the lens from all rays except those from the picture. If the picture be dull, and the detail apparently buried, sponge the surface with water to which a little glycerine is added. This will cause detail to "bear out," and the picture may afterwards be wiped dry without injury. Take care to light the picture so that no false surface reflections enter the camera. We regret that we could not have written you a letter to reach you earlier than this.

Several Correspondents in our next.

Photographs Registered.

Mr. J. Leach, Ashton-under-Lyne,
Photograph of J. Sidebottom, M.P.

Messrs. Fradelle and Co., Regent Street, W.,
Two Photographs of the Archbishop of Westminster.
Two Photographs of Thos. Chambers, Esq., M.P.
Two Photographs of Capt. Grosvenor, M.P.
Two Photographs of Mr. Ayrton, M.P.
Two Photographs of Dr. Brewer.

Messrs. Winter and Son, Beverley,
Photograph of Mr. G. M. Usher.

Mr. Thos. Bennett, Worcester,
Photograph of Bromsgrove Church.

Messrs. Appleton and Co., Bradford,
Photograph of E. Miall, Esq., M.P.

Mr. B. Leaver, Blackpool,
Photographic Group of Manchester Volunteer Officers.

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PREPARING VARIOUS SURFACES FOR PHOTOGRAPHIC PRINTS.

At the last meeting of the Edinburgh Society Mr. Davies read an interesting paper, which will be found in another page, in which he described a mode of preparing almost any surface, no matter how unsuitable in itself, for receiving photographic impressions. It consisted of an emulsion formed by mixing a warm solution of gelatine with a lac varnish; or, in other words, it consisted of a sizing preparation, used in the gilding trade, formed of a mixture of ordinary French polish diluted with its own bulk of methylated spirit, and a weak solution of gelatine. To this mixture about 4 grains per ounce of chloride of sodium, or suitable proportion of other chlorides, were added, and the surface intended for printing was treated with the mixture, which was applied with a flat brush, being subsequently sensitized by floating or brushing with an ordinary 40-grain silver solution, or an ammonia-nitrate solution.

However coarse, absorbent, or greasy the surface of the paper or other material might be in itself, after treatment with this semi-waterproof coating it yielded good prints. All kinds of rough, common paper, bibulous paper, wrapping paper, paper printed with greasy ink, &c., had been tried, and prints were exhibited to the meeting the image being in all cases preserved perfectly on the surface, and showing no imperfections due to soiled, greasy, rough, or absorbent material underneath. For painters' canvas and similar materials it is probable—although we have no direct information on the subject—that this mode of preparation would prove pre-eminently suitable; and we can conceive a variety of applications in which a surface of this kind would prove of great value.

At present we know of no drawback; there is only one, we fear, and time alone can determine the question, unless Mr. Davies' experience already afford any suggestion on the subject. The question arises as to the probability of permanency. At first sight—and possibly after full consideration—it should appear that a semi-waterproof surface should be more conducive to permanency than one readily permeable by moisture. Our half-shaped doubt on the subject arises from experience with surfaces in some degree analogous. Some years ago, in our early experiments with the collodio-chloride of silver process, we tried printing on white *papier-mache* which was prepared for us expressly for the purpose. We also tried the material known as artificial asses' skin, prepared as washable tablets for memorandum books. In both cases the results obtained were very pleasing, and, at first, in every way satisfactory. It was not until the prints had been exposed for some time that we noticed a gradual discolouring in the lights, which suggested that a combination had been formed between the varnish surface and the silver, which ordinary fixing had failed to remove, and hence a gradual darkening or discolouration of the lights of the picture. The more compact and impervious to aqueous solutions the surface, the more difficult is the process of perfect fixation, especially if the surface itself, as well as the salts applied to it, have a tendency to combine with silver. Those who have worked in ivory printing with silver know the difficulty of securing perfect fixation unless especial care be taken. In some silver-printing-on-ivory processes it is thought desirable to fix with cyanide of potassium, and in other cases a very strong hypo bath is desirable, and then very careful washing in warm water to remove all trace of the salts, which the ivory retains with great tenacity. We mention this fact in relation to ivory printing because the hard, semi-waterproof preparation described by Mr. Davies will, we apprehend, give a surface somewhat analogous, both in perfection of texture and in the tenacity with which it will retain salts with which it has once become impregnated. Mr. Davies can probably, from the experience he has already had with this material, throw some light on the possibilities we suggest.

Since writing the above we have been favoured by Mr. Davies with several examples of the mode of printing in question. Although we were prepared to anticipate good results from the method described, we are astonished and delighted with the unusually fine artistic quality of the texture, tone, and general quality of the prints produced, not less than with the singular degree in which the use of this preparation renders the photograph independent of the original character of the material to which the preparation is applied. There is in all cases a rare degree of force and depth, without harshness, in the general character of the picture. There are various tones, of which the most prevalent, an exceedingly rich velvety black, resembling the colour of a fine mezzotint engraving, is the finest. The surface is quite matt, but without dullness or flatness. We have examples on the common blue paper used for seidlitz powders, on cartridge paper, on rough drawing-paper, on brown packing-paper, on the back of a posting bill, and other kinds of paper, and in all cases the print is free from any blemish or indication that the material is unsuitable. Mr. Davies informs us that since the meeting he has tried its application to prepared canvas with perfect success, some slight modifications being, however, necessary, which we shall publish shortly. The great excellence of the results gives additional force to our desire that the prints should be fairly permanent. We should add, however, that an actual inspection inclines us to believe that much of our first expressed doubt is groundless, as the thinness of the coating and the apparent absence of an appreciable repellent or waterproof surface destroy considerably the analogy upon which our doubts were based. We shall, however, be glad to learn the results of Mr. Davies' experience in regard to the prints which he may have subjected to the test of time.

ANOTHER PERMANENT SENSITIVE ALBUMINIZED PAPER.

One of the most interesting, and, in some aspects, one of the most important, of the photographic movements of recent times, has been the effort to secure papers sensitive which might be kept ready for the printing-frame for months without deterioration. We have already had the various modifications which give to paper prepared with our own collodio-chloride process keeping qualities, the Leptographic, the Obernetter, and other manufactures. We have also had the Carrier albuminized paper, and the carbonate of silver paper, each with its special claims to attention. Another preparation of this kind has recently been very modestly introduced to the public, which, from our present experiments, we are inclined to think will be found at least as valuable as any of its predecessors.

We have, during the last few days, tried some experiments with "Durand's Rapid Sensitive Albuminized Paper," a very unpretending announcement regarding which appears in our business columns. The results have been pre-eminently satisfactory. The extent of the keeping properties can, of course, only be determined after the test of time, and we have not as yet had a sample to keep more than a week. Within that time, however, quite sufficient to turn ordinary sensitized albuminized paper hopelessly brown, no change whatever has taken place in the sample in our possession, the paper remaining perfectly pure and white. It prints in somewhat less time than ordinary albuminized paper, and, with good negatives, yields excellent prints, with more vigour than some other samples of albuminized paper, prepared for keeping, which we have seen. It assumes a warm, rosy tint in printing, whilst Carrier's generally assumes a lavender tint, and does not yield so much vigour as Durand's paper. The inventor recommends the acetate toning bath, and the examples we have seen toned with that bath are very excellent; but, in our experience, almost any bath will serve. We have tried the sulphocyanide bath, the bath with chloride of gold and a trace of carbonate of soda, and the bath with chloride of gold and carbonate of lime. All yield good results, but we prefer the last, which gives fine, rich, deep purple browns.

Our experiments, as yet, have been necessarily limited, but, so far as we can judge, another valuable addition has been made to photographic facilities, useful to all, and pre-eminently useful to amateurs. We hope to report again, after further experiment, and after opportunity of testing keeping powers as well as printing qualities.

MR. JOHNSON'S DEMONSTRATION OF THE CARBON PROCESS.

The demonstration of the working of his new carbon printing manipulations given by Mr. Johnson at the Photographic Society on Tuesday night was in every way successful and satisfactory. With the small and complete equipment of tanks and dishes which we have before described, he mounted, developed, and transferred a number of excellent pictures, without a hitch or failure of any kind, to the interest and delight of all the members, who eagerly gathered round to witness the beautifully simple and efficient operations.

The faculty which so distinguished Faraday as a lecturer, of accompanying efficient experiment by an easy running commentary of instructive remarks and explanations, so rarely met with, is possessed by Mr. Johnson in a pre-eminent degree, and contributed on Tuesday night to invest the demonstration with much additional interest and actual value, the various little points of manipulation being made perfectly clear and simple to every one by the explanations which accompanied all the operations. We can only advert here to one or two of the most novel and valuable of the points in question. In floating the tissue on the bichromate solution—a plan infinitely better than immersion, as permitting the absorption of less solution, and therefore securing more rapid drying—he explained that the horny, curling character of the tissue sometimes made floating not quite so easy: the plan adopted, therefore, which secured perfect success, was to roll up the piece of tissue into a cylinder, prepared side outwards; the outer edge was then turned up for half an inch, which formed an even, flat termination to the sheet. This, being brought into contact with the surface of the solution and pushed along, the cylinder unrolled itself, and came gradually into contact with the bichromate bath, displacing the air, and ensuring the absence of air-bubbles. The tissue was left in contact with the solution for a period of from one to three minutes, the strength of the bath used being three per cent. This gave a satisfactory result, drying rapidly, and proving sensitive.

The use of an instrument called a "squeegee" was next explained. Those of our readers who have spent any time on board a ship will have seen the sailors engaged in the morning in an operation styled "swabbing the deck," in which, after using a mop or "swab" and plenty of water to clean the deck, it is rapidly dried by the aid of a "squeegee," which is an elastic scraper with a handle. The edge of this scraper in contact with the deck drives all water before it, leaving it surface dry. Mr. Johnson's "squeegee" is a tolerably rigid strip of india-rubber fixed in a handle. The exposed tissue having been immersed in water for a few seconds, until it begins to warp, prepared side outwards, is then placed in contact with the waxed or stearine coated glass, and the squeegee being drawn over it drives out all air-bubbles, and removes all superfluous moisture. After this, it is set aside for from five to ten minutes, and then immersed in the warm water for development as we have before described.

An additional operation which Mr. Johnson described is worth mentioning. To give increased assurance of permanency, and check even the possibility of the insoluble gelatine present in the completed picture absorbing moisture, Mr. Johnson sometimes treats the undried developed image with a solution of shellac in ammonia. This, being absorbed by the still moist image, renders it impervious to moisture when dry. It serves, however, another end: the image so treated may at once be covered with the transfer paper without waiting for drying. A piece of moistened paper brought into contact with the image, and pressed down with a flat camel-hair brush, adheres perfectly, and, when dry, a waterproof as well as permanent print is lifted away without any trouble from the glass. We need not dwell on the other points of manipulation which were exhibited, but may conclude by remarking that we only echo the general voice we heard around us in describing this as a most successful and satisfactory demonstration of one of the most complete and elegant processes we have ever witnessed.

MR. BLAIR'S PAMPHLET ON CARBON PROCESSES.

We have just received the pamphlet on various modes of carbon printing which Mr. Blair has published by subscription. As might have been anticipated, it is full of the interesting and ingenious suggestions which a constant devotion, in thought and experiment, to one subject for upwards of ten years has engendered in a mind of unusual intelligence, especially fertile in resource and in inventive capacity.

The pamphlet is chiefly devoted to novelties, although various suggestions occur which will be found of value in relation to existing processes. The primary aim is to describe various modes of obtaining carbon prints with half-tone, without any transfer process. The first and simplest method described consists in a mode of rendering the support of a layer of sensitive gelatine and pigment transparent, so that, being exposed through the transparent support, the superfluous material may be washed away on the other side, a print in due gradation being thus developed. To effect this a fine-grained paper is selected, fine thin *Rive* answering well. This is coated with albumen on one side, to prevent the bichromated gelatine penetrating the texture of the paper. The albumen is brushed over with alcohol or methylated spirit, to partially coagulate it. A suitable pigmented gelatine is then applied to the albuminized surface, and the tissue is kept in this stage ready for use. It is rendered sensitive, when required, by floating on a solution of bichromate of potash. Before exposure, however, the paper is made transparent by brushing it with turpentine. It will remain transparent for some hours, whilst the exposure required is only some minutes. It is then exposed with the back of the paper in contact with the negative; the side of the sensitive layer of pigmentized gelatine in contact with the paper, being, of course, first acted upon by light, the upper is washed away in the process of development with warm water, and a due rendering of half-tone is of course obtained. It will be seen here that the only limit to the delicacy of the half-tone is the texture and the quality of the paper through which the printing must be effected. For many architectural and rural subjects the texture, if not an advantage, will, at least, be no disadvantage in a pictorial point of view.

The next method described is a mode of securing a similar result without using albuminized paper, and without the necessity of preparing the pigmented gelatine, Swan's carbon tissue being available for the operation. A piece of Swan's tissue, or a similar transfer tissue, having been immersed in a solution of bichromate, is brought into contact with another piece of thin fine paper, eventually to be made transparent and printed through. Mr. Blair describes the operation as follows:—

"The thin paper on which the picture is to be taken is *floated* above the tissue, and, after a few minutes' steeping, the two are steadily and gradually drawn out, so that they will cling together and adhere. After draining a little (but they should be so carefully lifted as not to require much draining), they are laid down on a board, as before, dry side next the board, pinned at one end; the board lifted and set against a wall, so as to suspend the papers from the pins, and left to dry, as before explained. In this case, as a thicker body of pigmented gelatine is used than is necessary in the other case, the drying will take rather longer time unless expedited by artificial means, but the difference need not be great. If sensitized over night, they may easily be dry next morning by hanging in a well-aired room. Indeed, I think that the enclosing of the gelatine between two layers of paper rather facilitates the drying; the rough surface of the paper presents a broader surface for evaporation; and as the external surface of the paper dries, the moisture is drawn out from the gelatine by the capillary attraction of the paper faster than when the bare surface of the gelatine is exposed to the air.

"When dry, the thin paper is saturated with turpentine, exposed, and washed up as before—the only difference here being, that, in the washing, the tissue paper has to be released when the gelatine is sufficiently softened; still, this is not a transfer properly so-called, for the impression is taken through and on the paper on which the picture finally remains, this paper having been attached to the gelatine in its soft state, and before any picture was impressed upon it. The tissue paper is simply washed away, as if it were a portion of the gelatine itself.

"Pictures may be got just as easily by this process as by the other, and the use of albumen may be dispensed with. The reason is simply this, that the gelatine surface placed in contact with the thin paper, though softened by the bath, is not in a state of liquidity, and does not enter the pores or interstices of the thin paper, but lies quite upon its surface, so that the turpentine has no interruption, but penetrates quite through the paper, and is only stopped at the surface of the gelatine in close contact with the paper. Albuminized paper, however (if the albumen is slightly coagulated with spirits beforehand, so as not to melt in the bath), can quite as easily be used in this way; and one material advantage of this modification of the process is, that it enables us to use the tissue which is now made and sold by other parties without obliging us to manufacture tissue for ourselves.

"I should perhaps here mention that though plain thin paper may be used in the method above explained for taking prints, it must be remembered that some kinds of it are apt to get very soft and tender in the hot water during the process of development, and require to be handled, especially at the broad lights—such as the sky of a landscape—with great care, otherwise, having little or no gelatine at those parts to hold the paper firm, it is easily torn. Albumen gives the thinnest paper much additional strength throughout the whole operation; and, indeed, even when I want a print on plain paper, I prefer an albuminized sheet; but in this case I make the albuminized side the back of the paper, and it has several advantages, the principal of which perhaps is, that when you brush the turpentine on that side you can rub it off again and make it almost surface-dry without exposing any of the grain of the paper to over dryness."

Chapters on the use of tissue with two colours, on the general preparation of tissue, on the use of varnished paper as a support for the sensitive layer, on the use of white pigments, on printing from transparent positives instead of a negative, on preparing transparent paper, on a single transfer process, and on a modification of Fargier's process, follow, all of which will be read with interest by the carbon experimentalist, but which for obvious reasons we do not enter into at length at present. We simply give our readers a sample, to stimulate their interest to procure the pamphlet, which, we assume, may still be obtained of Mr. Blair. We conclude, however, with one more extract on

"A New Tissue and a New Process.

"I am now to propose a kind of tissue which, while it may be used for any or all of the known transfer processes with very good results, is more especially required—indeed, seems to be essentially necessary—for the process which I am presently to explain, and by which pictures are obtained in all the natural gradations of light and shade, by direct printing on pigmented gelatine from ordinary unreversed negatives, without transfer of the print, and without violating the acknowledged correct rule of carbon printing.

"The tissue I refer to is made by the substitution of *cloth* for paper. The composition and texture of the cloth may be varied according to circumstances, the only essential being that it should not be too closely woven. This tissue may be made in various ways. The cloth may be damped, and sheet gelatine, made with the proper admixture of carbon or other pigment or dye, may be pressed into contact with it, and the tissue is made. The gelatinous composition adopted by M. Poitevin or M. Fargier may be used, but a little sugar, syrup, or glycerine may be added with advantage. This tissue may also be made by drawing the cloth over warm pigmented gelatine several times, till a sufficient coating adhere to it; or the gelatine may be poured on well cleaned glass, previously coated with ox-gall or wax, either with or without a preliminary coating of collodion, and after it has thickened the cloth may be laid down upon it, and brushed into contact with a soft brush—the air escaping easily through the cloth—or the gelatinous mixture may be allowed to dry, and the cloth afterwards laid down damp upon it. When again dry, it is relieved round the edges with a knife, and lifted off the glass. The plan that I have usually adopted, however, is this: I take a piece of that thin semi-transparent starched or glazed cloth used by architects and land-surveyors, &c., for tracing drawings and plans. I dip this in cold water, and immediately, by means of blotting-paper placed above it, rub it flat and level on a slab of plate glass, to which the damp starch gives it a temporary adherence. Upon this I pour and spread quickly the gelatinous mixture, not *very* hot, as the quicker it *sets* after being spread the better. The glass had therefore better not be warmed beforehand. Any small quantity that may go through the cloth and adhere to the glass will do no harm, but if the gelatine be used too thin or too hot, it will find its way below the cloth in considerable quantity, and impoverish the surface. A small margin may be left uncovered all round for convenience in handling. When the gelatine has solidified sufficiently, the cloth is lifted off the glass and hung up to dry. This tissue can be handled wet or dry, and tacked round the edges without fear of tearing.

"For any of the transfer processes this coating of pigmented gelatine should be put on rather copiously, but for the process that I am now to explain the coating need not be so heavy; but a super-stratum or skin of clear gelatine, and also a coating of collodion or other strengthening varnish, should be put over the surface.

"This tissue then is sensitized in the bath in the usual way. If a waterproof varnish has been put over the surface, it may be sensitized through the cloth, but otherwise it may be immersed or floated as found most convenient. When dry (and it is best to dry it on frames, to keep it stretched), it is sunned with the face of the negative direct against the gelatine surface. A small margin of the blackened surface may be allowed to protrude on all sides beyond the negative, so as to fix the gelatine to the cloth round the margin more firmly.

"The development is effected in warm water, by washing the melted gelatine and loosened pigment out through the back and sides of the cloth. The water penetrates the cloth so quickly and copiously, that the print is soon undermined, and loses its hold of the cloth, except, perhaps, at the deepest shadows; and the discharge of the black matter may generally be facilitated, especially if the texture of the cloth be rather close, by raising the print gently from the water, and allowing it to escape by the sides. To effect this operation more easily and safely, it is well to attach by pins the cloth tissue before development—gelatine side uppermost—to a small floating frame, which can be moved about and up and down in the water, to assist in the disentanglement of the dissolved matter from the cloth. The high lights and half-shades may gradually swell out considerably—indeed, rather too much to be manageable, if a waterproof varnish has not been put over the surface. But varnish or collodion will check this. The frame should be kept floating in the water until the picture appears sufficiently developed. It may then be lifted, and the picture allowed to dry on the bare cloth, or it may be turned in the hand face downwards, and a little warm gelatine, mixed with white pigment, may be gently poured upon the back. This will find its way through the cloth, and may be run along the back of the picture to soften the grain of the cloth, if that should be desired; or this may be done (better, perhaps), after the picture is dry, only to certain parts of the print, by damping those parts and inserting the pigment. But the minute and regular grain of the cloth is, to my taste, a great improvement to some prints—giving them somewhat the appearance of oil paintings on corded canvas. Indeed, cloth might, in some cases, be advantageously used as a medium of transfer from paper tissue, and remain as the final support.

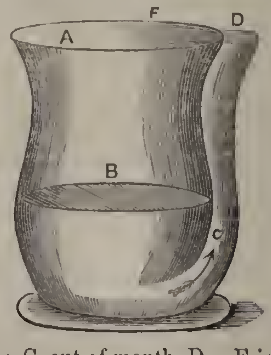
"If it is wished, however, to remove the cloth after the picture is developed, and substitute paper in its place as the final support, this is easily done, especially if the starched cloth above recommended has been used for the tissue, as it drops off in the hot water very readily; the white paper can be inserted underneath, and the picture lifted upon it, to which it will firmly adhere on drying."

A NEW DEVELOPING-CUP FOR THE GELATINO-DEVELOPER, AND COLLODION FILTER.

BY DAVID DUNCAN.*

All photographers, I presume, who have used the gelatino-iron developer have been troubled with the peculiar muddiness and stringy deposit which forms after standing a day or two, and the consequent difficulty of filtering, with ordinary filtering-paper, the aforesaid developer for use. I generally filter with a piece of flannel, which does very well. But gelatine in the developer does not suit all classes of subjects, although some operators may think so, nor is it suitable to use upon all occasions. There is nothing like the old-fashioned plain iron developer when everything else is working satisfactorily. Gelatine in the developer is useful at times; it is undoubtedly a valuable acquisition to the "dark room" for the "hour of need." Therefore, after developing solution containing it has been made up some time, whether previously filtered or not, the stringy substance begins to form, which, coming in contact with the plate, is very difficult to remove, and often damages a picture. I am not presenting a new trouble: others have complained of it. It is not commonly met with when the gelatine has been treated with sulphuric acid, or when there is plenty of sugar in the developer. Generally, both the sulphuric acid and the sugar are abandoned, as they very much retard the developing action, and increase the intensity. Such being the case, the following idea for a developing cup may be useful to those who keep the gelatine developer in a dark room:—

A, opening to pour in the developer, which, filtering through perforated partition, B, passes, when used, through opening of arrow, C, out of mouth, D. F is a covering, to prevent the unfiltered solution from overflowing when tilted by the operator. It might be difficult and expensive to have them made of porcelain or glass. Could they not be made of gutta-percha? Of course, when the photographer has predetermined to use gelatine in the developer, he will have some ready filtered; but when some, after standing, is required speedily, a vessel like the above would surely prevent a plate from being injured. At any rate, such a thing would be of service to the amateur.



Collodion Filter.

An ordinary kerosene-lamp chimney with a little cotton-wool inserted in the narrow end answers the purpose admirably, likewise for filtering gelatine solutions; a piece-glass can be placed on the other end when in use, to avoid evaporation and dust. A lamp chimney has been before recommended for the purpose, but with an additional arrangement, rather complicated compared with the above suggestion.

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The Art of Seeing.—With the majority of men it is a matter of long study to see anything at all, much more to see a whole so perfectly as to accept the good, and reject the bad. —*Nelson K. Cherrill.*

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* *Philadelphia Photographer.*

THE BLACK SIDE OF OUR MODERN PRINTING PROCESS.

BY DR. JULIUS STINDE.*

At the last German Photographic Exhibition held at Hamburg an opportunity was afforded to the observer, not only of comparing the productions of various operators, as regards their artistic and technical qualifications, but it was also possible, in consequence of the lengthened duration of the gathering, to form an opinion with reference to the capabilities of endurance of the pictures exhibited.

The lateness of the season, and the unfavourableness of the weather, the moisture (partly introduced by the public, and partly by slight imperfections occasioned in the glass roof of the building by the violent storms), the frequent change of temperature brought about by lighting the interior with gas—all these circumstances combined could not fail, in a very short time, to effect a distinction between the good and the bad pictures, for upon the imperfectly washed prints the sickly yellowish tint of the soda became quickly apparent. The above-mentioned circumstances, however, together with the searching light within the building, were not alone instrumental in rousing into action the concealed enemy: several pictures were found, on the unpacking of the cases, to be already attacked. During the period of the exhibition this injurious action naturally continued, and, with some of the pictures, to such a degree, that in the course of three weeks only the deepest shadows in the print were to be recognized; the half-tones had become merged into the yellow lights, and were with difficulty distinguishable from the original whites.

That such appearances could not have been overlooked by the majority of the public is evident, and the injurious effects which the exposition of "our shame," as one of our best photographers has aptly denominated the fading of badly-washed pictures, must ultimately have upon the profession, need not be dilated on. The questionable stability of silver prints has long been a stumbling-block in preventing the spread of photography, and this prejudice cannot fail to increase when the public discover that there are some descriptions of photographs which perish after the lapse of a few weeks only.

Characteristic of the energy of the damage exerted by the hyposulphite is the letter of an exhibitor, who positively asserted that some evil-disposed person had poured over his specimens (enlargements) some corrosive fluid, and in their injured state his pictures were returned to him. The corrosive liquid was nothing more than moisture derived from the lungs of vistors, or from circumstances already referred to; this moisture condensed upon the unframed pictures, and the soda contained in these was thus set into busy action, for, as the old chemical proverb has it, *corpora non agunt, nisi soluta.* That the moisture alone was not guilty of the injury to the prints is proved by the fact that numerous specimens hanging in the immediate vicinity of the damaged pictures, and subjected to the same influences, remained as fresh and vigorous as when first issued from the studio. In many instances the frame and glass were insufficient to shield the photographs from their inward destruction.

An interesting fact, and one well worthy of record, is, that wherever the presence of hyposulphite was perceptible, the whole collection shown by the same exhibitor generally bore traces of the deteriorating influence throughout; it was seldom the case that among the good pictures of another exhibitor one or other of the specimens showed signs of injury. Figures prove this fact. Out of 187 exhibitors (of pictures) 21 show prints which were more or less damaged by hypo, at the rate, therefore, of 11 per cent. Out of 1,830 pictures exhibited, there were 268 suffering from the presence of hypo, representing a percentage of 14. From these figures we deduce that a larger number of the damaged pictures must be divided among a small number of exhibitors, and therefore individual exhibitors must have shown whole collections of badly-prepared pictures. If there had been a larger percentage of exhibitors of inferior pictures, it would have been our duty to have recorded that the hypo difficulty was a general one.

The 11 per cent. of exhibitors of inferior pictures, the greater portion of whose productions (at least, 55 per cent.) contained hypo, were men whose work was uniformly uncertain. A study of the location of the studios of these photographers, whose whereabouts was discovered partly by means of information, and partly by inference, showed that in these particular cases no water was laid on in the vicinity, and that the proper washing of the pictures was therefore a matter of difficulty. This cause can, however, be scarcely accepted as an extenuation of the fault, but is rather a proof, either of ignorance in the manipulation, or an indifference to all photo-chemical re-actions.

If we assume that the best works of these gentlemen were sent to the exhibition, and that out of every hundred pictures fourteen were contaminated with hypo; and that out of every hundred exhibitors eleven forwarded pictures of this description, which perished under the very eyes of the public; then it is perfectly clear how much yet remains to be done before the art is perfected; and, moreover, how difficult it will be to vulgarise improvements in the process. A photograph of 1850 which has faded may be overlooked, but to forgive an exhibitor who, in the year 1868, exhibits pictures which perish from the effects of hyposulphite within a few days, is absolutely impossible, for he who is ignorant of the all-important operation of washing a photograph, and of the manipulations to be pursued for freeing a print from hyposulphite of soda, has certainly no pretensions to be considered a practical photographer. It is the duty of every photographer to devote himself to the task of exterminating altogether our arch-enemy, hypo, and, at the same time, the misgivings of the public in regard to the stability of photographs, even when the art appears to him merely in the light of a milch-cow, and he is ignorant or indifferent as regards its present importance or future position.

ON A NEW METHOD OF PREPARING ANY KIND OF PAPER FOR PHOTOGRAPHIC PRINTING.

BY W. H. DAVIES.*

The Edinburgh Photographic Society seems to have set itself, during the last few meetings, to the task of considering, in a succession of papers, the different modes and media with which and on which silver prints could be impressed; and this resuscitation of a nearly forgotten idea must be put down to a desire to keep up the same train of thought, and to prompt experimenters in this and similar directions to increased energy and perseverance.

Some dozen or more years ago, when considerable difficulty was felt by most amateurs, and also by many professionals, in the manipulation of albuminized paper, and the greater difficulties which that class of paper caused in toning, fixing, and washing, I conceived the system of preparing plain paper on which I propose to treat this evening; but at that time there was no Edinburgh Society, where these little things could be ventilated and discussed, and it had fallen asleep again until now. In re-directing my attention to this unpublished idea, I find that it has an importance, and the results it produces a power, which warrants its present publication, but which, at the moment of its first discovery, did not appear.

Ideas which are useful, new, and good, are said to be fair patentable commodities; but as I entertain decided objections to all patents whatever, and especially to those granted in connection with photography, I must begin as Mr. McCraw did at the last meeting—by protesting against any person, authorised or unauthorised, taking possession of this little scrap of useful knowledge, and attempting to prevent everybody from making use of it if everybody chooses to do so. That there is need for this you may judge when I state that only last week I noticed another of those unjustifiable claims for patent protection for an idea which I know was not the property or invention of the person claiming it, and which many of you, gentlemen, will recollect was embodied and fully detailed in a paper I read before this Society four or five years ago. I allude to the coagulation of a film of albumen on paper by a jet of steam, the invention, I believe, of my friend Mr. Wood, of this city; and, painful as it is, I may tell you that this is the second application for a patent for the very same idea.

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* *Photographische Mittheilungen.*

* Read at a meeting of the Edinburgh Photographic Society, May 19, 1869.

As the method I am about to describe will enable professional photographers to do without the cumbrous, costly, and inartistic method of putting a glass positive above a piece of crayon paper with a few hatched lines on it, and produce as fine results, at least—certainly more artistic and at less cost—you will perceive I have need to preface it with a few words against appropriating ideas and patenting them.

At present, when enlargements are the order of the day, and when the best methods for producing them are sought for in practice, this may prove of considerable help and assistance. No other method of preparing papers that I know of (and I have tried most of the published and many unpublished methods) will keep the image so well on the surface, especially if the papers are of the rough and porous kinds used for crayon drawing, or even the harder and rough drawing-papers for bold sketching and water-colour painting. And when I tell you that several of the prints before you are printed on common wrapping and packing papers, on house-painters' cartridge paper for covering walls, some of them made from tarry ropes and other photographic abominations, as well as others on printing and blotting-paper, on crayon and drawing-papers, you will have an idea of the power which this method gives in securing purity of delineation on such impure and uncongenial surfaces.

One of the examples, you will notice, is printed on one of Sarony's lithographed sheets of crayon paper, the greasy ink of which, you will observe, offers no obstruction to the attachment of the photographic image, and, in fact, before a serious scientific and artistic body like this, a joke is not a proper thing to pass. But, without joking, here is a photograph printed on the back of an ordinary posting-bill, and, except that it would have been too funny, I would have brought one printed on the face of the printed oily ink surface. This print, you see, is perfectly clean, sharp, and spotless, although the greasy ink has come through the back of the paper.

This method seems to secure perfect immunity from many of the little accidents and stains that occasionally mar an otherwise good impression—not, of course, from the action of spots of metal, or the like, enclosed in the body of the paper; but it seems to prevent damage or spots from almost any other cause—such as dirty fingers, or anything else. If it do not, then I must have been singularly fortunate in getting good samples of paper from so many unpromising sources, and of so many different colours and qualities.

My method of preparing the surface—for I believe it will do for many other surfaces than paper—is the following for direct printing:—Take from 4 to 6 grains of gelatine, soak it in an ounce of water for an hour, then melt it gently over a fire, hot plate, or water bath, using a clean earthen pipkin. When fully dissolved, add to it, while yet warm, and stirring it gently during the mixing, from 4 to 6 drachms of a solution of white lac in methylated spirit, if for white or pale surfaces; but orange lac will do if the surface be of a darker colour. This is made in the proportion of 6 ounces of spirit to 1 ounce of lac, and digesting it till fully dissolved. The mixture of the gelatine and gum lac in spirits produces a creamy-looking emulsion, to which is added 4 grains of chloride of sodium, or a like equivalent of chlorides of ammonium or barium, and, when fully dissolved, filter through fine muslin into a clean pipkin, and it is ready for use.

I generally apply the solution warm with a flat camel's-hair brush, crossing it till it lies evenly. When dry it is ready for sensitizing, which may be either done by flotation on the ordinary printing bath, or by brushing on the silver solution. I prefer to use the ammonia-nitrate solution brushed on; but there are specimens by both methods before you. I use 40 grains of silver to the ounce of water. Some of the ammonia-nitrate prints contain also a large proportion of citrate of silver in addition to the usual ammonia-nitrate.

As you will see, the tones of many of the untoned prints are quite as fine in colour as are those toned with gold, and I attribute this entirely to the variations in the salting and in the strength of the size and lac solution, and to the minute variation of the silver bath by the addition of various salts in the course of sensitizing.

The question will probably be asked: Will this method allow of printing by development? I can only say that I believe it will. There is nothing in the materials to prevent it; but I have not had time to go into that branch of the matter, as the large number of examples before you may prove; but I will endeavour, before next meeting, to get some done in that way. From the fact that the process is a very sensitive one in ordinary contact printing, I have no doubt it will also be so in printing by development.

PERSPECTIVE AND PHOTOGRAPHY.

BY AN AMATEUR.

In a paper published in the Photographic News of the 8th and 15th of January last, I showed experimentally:—

1. That when objects of the same height are at different distances from the eye, the angle they subtend—or, in other words, their apparent height—is in inverse proportion to their distance from the eye.

2. That the same law holds with regard to reflections in a plane mirror; the apparent size of the reflection of any object being the same as that of the object itself would be if it were placed as far behind the mirror as it actually is in front of it.

3. That the law is equally true when a well-focussed image is formed on a flat screen placed vertically, by a fixed rectilinear lens whose axis is perpendicular to it; and that, therefore, the proportion of the size of the images will be just the same as that of the objects themselves as seen by an eye placed at the optical centre of the lens; in other words, that the perspective of the image will be true.

These laws being established, I will now proceed to consider the laws of photographic perspective under the following different circumstances, and endeavour to ascertain the causes of the unsatisfactory nature of the perspective of so many photographs.

I. A fixed rectilinear lens whose image is received upon a vertical flat focussing screen perpendicular to the lens.

II. The screen is not flat, but a portion of a vertical cylinder.

III. The lens not fixed, but revolving, the screen remaining perpendicular to it.

IV. The lens inclined upwards or downwards, the screen remaining vertical.

V. Both the lens and the screen inclined, the former remaining perpendicular to the latter.

VI. The lens horizontal, but the screen inclined upwards or downwards.

First of all, we must find out how a picture ought to be painted so that the perspective may be correct. At page 34 of "Hayter's Perspective," edition 1832, I find the following sentences:—

". . . . This outline or limits of the picture . . . must be conceived to be the size of an *aperture* through which you view *the object* of your study (I do not mean a picture or drawing, but a real scene or object of nature); and the glass surface, supposed to cover this aperture, is always to be understood as the *transparent plane* on which, with your eye *stationary*, the drawing might be made a perfect outline." Every picture, then, is supposed to be a transparent plane on which the objects are painted exactly as they are seen through it by the eye; and all lines are represented of exactly their apparent size, and in their apparent proportion to each other, the scale on which they are drawn being larger or smaller according as the plane is placed further from or nearer to the eye. A picture so painted will be in correct perspective; but these are just the characteristics of the image produced by a rectilinear lens. An illustration may, perhaps, make this matter still clearer.

Suppose a painter to draw a landscape or a portrait on a piece of glass fixed in an upright position, as Hayter describes; having regulated the scale by the distance of the glass from the eye, he regulates the angle to be included by the size of the glass, just as the photographer photographs to such scale and includes such angle as he wishes by selecting a suitable lens. We will further suppose that the drawing is so skilfully executed that it is impossible for the eye to distinguish between the painting and the landscape; then, if for the eye we substitute a lens with its axis perpendicular to the plane of the picture, and take two photographs, the one of the picture, the other of the landscape, they will be exactly alike, at least as far as linear perspective is concerned, and with that only are we attempting to deal. Everyone knows that a rectilinear lens properly used will give a correct copy of a drawing, therefore the photograph of the drawing is correct; and as the photograph of the landscape or model is exactly like it, that must also be correct, whatever may be the distance of the lens from the different objects, or from the different parts of the same object, and whatever may be the angle included.

Whether a rectilinear lens exists which is mathematically accurate is a question which opticians must determine; but my experiments show, at least, that if there is any distortion in those of the best makers, it is too small to affect the perspective to any obvious extent. Hence it follows that in every album, whether of views or portraits, the photographs which are taken with such a lens are in true perspective; but it is indisputable that a large proportion of those views and portraits do not give the *impression* of true perspective, and our present task is to find out why this is so, and, as was to be expected, we shall find that the draughtsman is liable to make just the same mistakes as the photographer.

Let us suppose that a painter wishes to make some experiments in perspective, and say that he chooses a gallery twelve feet high and six feet wide; that at distances of six feet lines are marked on the ceiling, walls, and floor; and that he places a figure against the nearest line as a guide for the eye in judging sizes and distances. The space on the floor between each line will be six feet square. He now places himself so that his eye shall be exactly six feet from the nearest division, and, having so fixed his glass that he may obtain a picture of such a scale and to include such an angle as he desires, he draws the diagram fig. 1 exactly as he sees the divisions through the glass. Keeping the glass at the same distance from his eye, he retires till he is twelve feet from the nearest division, and paints fig. 2. Again, at the distance of twelve feet, he paints fig. 3, holding the glass at double the distance from his eye, so that the nearest division is represented of the same size as in fig. 1.

In fig. 1 the painter is at six feet from the nearest division, and at twelve feet from the second; the dimensions of the latter will, therefore, be one half of those of the former, in every direction; the third division is at eighteen feet distance, so that it will be one-third of the first.

In figs. 2 and 3, the second division, being at one-half greater distance than the first, must be drawn of two-thirds its height and width, and the third division will have dimensions one-half as large as those of the first.

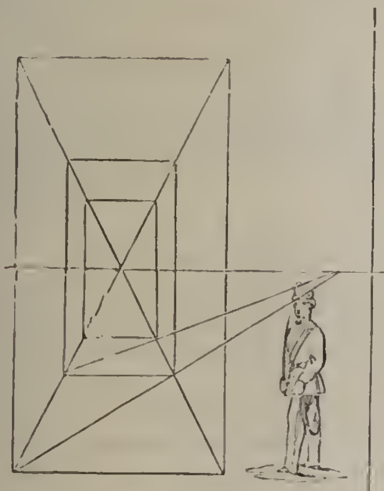

FIG. 1.

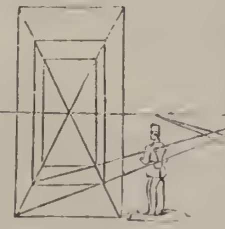

FIG. 2.

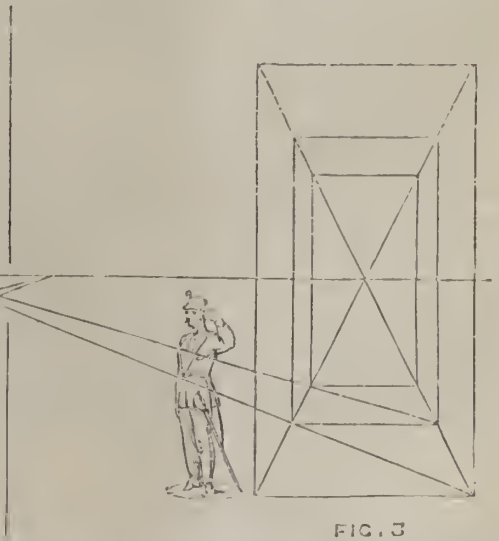

FIG. 3

If, now, we compare figs. 1 and 2 with fig. 3, we find that the latter gives a more nearly correct impression of the relative distances of the divisions from each other than the former. A person who saw the diagrams without having seen the gallery might, perhaps, guess, from fig. 3, that they were all equidistant from each other; but seeing only fig. 1 and fig. 2, he would conclude that the first and second divisions were much farther apart than the others. If he afterwards went to the gallery, and stood where the painter had stood, he would see the divisions exactly as they are represented, and yet he would see that all the divisions were equidistant from each other. The diagrams are all in correct perspective, and yet they do not give an equally true impression. I do not know any word which has been used to express this difference; I will, therefore, say that the perspective of figs. 1 and 2 is really true, but *apparently* false, while that of fig. 3 is both actually and also apparently true.

Let us take another illustration. A painter whose eye is six feet from the face of his model causes him to place his right hand in the plane of his eye, and his left three feet in advance. On the glass on which he draws his portrait the left hand will be represented twice as long and twice as wide as the right; and anyone looking at it would say that the hands were terribly out of drawing; but, in fact, they are drawn exactly as the painter saw them, and one hand did not appear to him any larger than the other. Here, again, the perspective, though *really* correct, is *apparently* false. How is this to be explained?

I think that an answer will be found in the fact that there is only one spot from which a picture can be so seen that it will give a correct impression of the original; that spot, namely, at which the artist's eye or the lens was placed when the picture was taken. If, for instance, after drawing a landscape upon a glass at a given distance in front of his eye, the painter, without moving his eye, places the glass nearer to or further from it, or to one side, the lines in the picture no longer correspond with those of the landscape, and the picture gives him a different impression from that which it produces when it was seen from the original spot.

(*To be continued.*)

CAUSES OF FEEBLE PRINTS.

BY CHARLES WALDACK.*

During the period of dry and cold weather this winter, I received from several sources a number of untoned pictures, which looked as if the paper was imperfectly silvered. Several of the senders stated that the paper had been floated long enough, and that the solution was sufficiently strong. It struck me that probably the defect was due not to a scarcity of fine nitrate of silver, but to the exceeding dryness of the paper, preventing the decomposition of the nitrate by the light. To test this matter, I slightly dampened the paper on which the spotted pictures had been made, by holding it for a few moments over warm water, and then laid it under a negative in the light. The result was, another print, full of vigour, and free from spots. The same experiment was repeated with all the samples I had (ten or twelve) with the same result, thus proving my surmise to be correct.

A few days ago, a dealer in photographic materials received back a quantity of albuminized paper, with the statement that it was worthless. Accompanying it were several prints which had the same appearance as those I mentioned before. Being tested, however, in the same way as the others, the spots appeared in the new print, thus proving that there was a real absence of silver here. The prints were then floated again, and, being again exposed to light, the paper was found to be of good quality, printing vigorously and without spots. Years ago, photographers used to float their albumen paper from three to five minutes; now the manufacturers of albumen paper are so persistently recommending short floating, to avoid discolouration, that some photographers have run in the opposite extreme.

Correspondence.

GOLDEN SYRUP, DEVELOPERS, PLATE-BOXES, ALBUMEN COATINGS.

Dear Sir,—We amateurs, who, during the summer holiday, knew the enjoyment of a fine day in the field with the *wet*—holding the *dry*, nevertheless, in reserve—have to thank you very much for some most helpful suggestions in recent numbers of the News.

A good while ago you relieved us of a prodigious burden, by replacing, in our tent furniture, all the intensifying and fixing materials by a bottle of diluted golden syrup; and, more recently, by giving Mr. Carl Meinerth's formula for iron development, you have conferred a very great boon on field workers. The development under this formula is really excellent—no hurry in the application, quietly poured on, and not a drop need go over the edge of the plate, while the result is, under ordinarily favourable circumstances, a good printing negative, with a fine bloom, without intensifier.

I wish I could show my brother amateurs a new kind of plate-box I have had made for tent work under the above conditions — no grooves, great facility in stowing away the negative, and absolute safety in the carriage, with about one-half the thickness required for grooved boxes. I need hardly describe the luxury of this, with large plates (*e.g.*, 12 by 10) especially. I may add, that by a very simple contrivance, by which the one side of the box is hermetically sealed, I carry out my clean plates on the one side, and bring back the negatives on the other, and yet the thickness of the whole box is as above.—I am, dear sir, very gratefully, Amateur.

Edinburgh, June 5th, 1869.

PS.—Let all careful workers take to the coating of plates with albumen. A very simple method of doing an otherwise troublesome job is: Place the plate upon the stand, levelled; pour a good circle of albumen on the middle of the plate; take a glass rod, and, gently touching the surface, lead the albumen round, and pour off at one corner. Very quickly done, and with care, not a trace on the other side.

COPAL FOR NEGATIVE VARNISH.

Sir,—I notice in a contemporary a letter recommending the use of copal in negative varnishes, and the writer says he was led to try it from the fact that the varnish on carriages does not crack, and that copal varnish is used to carriages. Will you allow me to caution photographers against the two errors in this statement? Copal varnish is by no means universally used for carriages, as "white hard" is cheaper, and is preferred by many. It is well known that the chief defect of copal is its tendency to crack. It is very hard and very brilliant, and, where it is required to be rubbed down to apply several coatings and get an enamel-like surface, nothing is finer. But it has always a tendency to crack, and is never safe. It cracks on coach panels; it cracks on pictures on canvas; and it cracks on pictures on panel. I am afraid the suggestion has been made without experience; but it would be a pity if any one were misled with it.—Yours truly, A Painter.

THE COLLODION DISCUSSION.

Sir,—The gentleman who wrote the "Echoes of the Month" in your last number has misunderstood the gist of the pyroxyline controversy, into which we have been reluctantly dragged by the reckless and unsupported assertions of rival manufacturers. They ostensibly directed their observations against Mr. Hardwich, but virtually against us. Although your contributor expresses himself in very flattering terms towards us, he is unjust towards Mr Hardwich, and otherwise conveys to your readers an erroneous idea of the subject in dispute.

Allow us once more to state emphatically, and to remind your contributor, that we have made no modification whatever in Mr. Hardwich's formula for manufacturing the pyroxyline used in our collodion; and we adhere to that formula for the best of reasons: because, after carefully trying innumerable experiments, with the object of producing an equally good article, at a cheaper rate, in colder acids, we entirely failed in doing so.

The only modifications that we have been able to make beneficially in Hardwich's formula for collodion are in the compounding of the bromo-iodizing solutions, and, occasionally, in the proportions and strength of solvents, so as to render our collodions better suited for special purposes

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* *Philadelphia Photographer.*

These modifications, we need scarcely remind your contributor, formed no part of the pyroxyline dispute to which he refers.

In justice to us we trust you will insert this explanation in your next number.—Yours, &c.,

W. W. Rouch and Co.

180, *Strand, W.C., June 7th*, 1869.

[We have pleasure in inserting the letter of our correspondents in correction of any real or supposed error which may have appeared in our columns. We fail, however, to see in what our contributor has conveyed an erroneous idea of the subject in dispute, inasmuch as he entered into no question of detail at all, but merely condemned, by implication, one manufacturer for endeavouring to draw another into a statement of his mode of manufacture, the matter being one less of public than of trade interest. Our contributor expressed no opinion on the point in discussion; but although it has been chiefly confined to the question of temperature in the preparation of pyroxyline, our correspondents know that such a question could not be satisfactorily discussed without giving it a wider range. It is difficult to discuss pyroxyline without some relation to the salts with which it is employed; and the confession of a modification in the salts employed has a very direct bearing upon the whole question. We do not intend, however, to enter into the discussion here; but we may suggest, that as rumour has freely spoken of other modifications which Messrs. Rouch have introduced into the manufacture of the collodion, it would be interesting to know not merely whether they adhere to the high temperature, but whether they follow in all respects the formula of Mr. Hardwich in making pyroxyline, using the same materials, in the same proportion, as well as the same temperature. It would be interesting, because we have heard so many capable practical men declare that they have failed in attempting to carry out that formula. We hold that no one has a right to ask a manufacturer to publish details of his operations in manufacturing a speciality, and only suggest these questions because our correspondents seem anxious that no misunderstanding should exist as regards their formulæ.—Ed.]

SPIRITUAL PHOTOGRAPHS.

Sir,—As a subscriber to the Photographic News, and anxious that something further should be known of both sides of the question in reference to spiritual photographs, I shall esteem it a favour if you kindly permit a few observations in reference to such.

The article in the last number of the News designates those photographs produced by Mr. Mumler, of New York—which he claims as photographs of spritual beings—as a "miserable hoax;" and, instead of arriving at such conclusion from the evidence elicited during the trial, assumes that such must be the case because imitations can be produced by the ordinary and well-known means.

Now if the existence of a spiritual being is admitted at all, and that such has become visible, I, for one, cannot see the impossibility of a photograph being taken; and if we believe the statement recorded in the Bible, who will deny the possibility of photographing the angels who appeared unto Abraham, partook of food, and conversed with him for a considerable time?

But, in reference to the subject at issue, permit me, for the information and satisfaction of those who peruse the Photographic News, to offer a very brief summary of the evidence, as given before Judge Dowling, by two or three of the numerous witnesses examined in the case, as reported by the *New York Tribune.*

Mr. Elmer Terry testified that he had a picture taken by Mr. Mumler, on which there appeared a picture of his son, who had died twenty years ago. He continued: "The resemblance was good. My son never had a picture taken while alive."

Mr. Samuel F. Fanshaw (cross-examined by Mr. Geary): The picture has been recognized by all his relatives as the form of his mother. She has been dead twenty-eight years.

Mr. Charles F. Livermore:—*Q.* "Who is the figure in the picture?" *A.* "It is my wife. She died eight years ago. It is unmistakable. The recognition was perfect, not only with myself, but with all my friends."

Mr. Jeremiah Gurney, 707, Broadway, testified: "I have been a photographer twenty-eight years. I witnessed Mumler's process. I went to scrutinize everything, and could find nothing which savoured of fraud or trickery."

I may also mention that Mr. Mumler was invited to the establishment of another photographer, Mr W. P. Slee, and that the spiritual photographs were produced under his immediate supervision, with his own apparatus, glasses, and chemicals.

Here we have the testimony of one of the most respectable photographers of New York, and the evidence of others—who, it is stated, could be produced by the hundred—who have identified the genuineness of the likenesses as that of some of their departed relatives and friends; facts which settle the question of trickery or fraud, and reach immeasurably beyond the imitations of spiritual photographs by the ordinary methods.

The possibility of photographing spirits, although appearing as absurd and impossible as the diurnal motion of the earth and many other great scientific and philosophic truths once did in the estimation of the learned and the wise, may now be permitted to meet the wants of an age requiring demonstration and proof—an age which has come almost to the verge of bitter unbelief in the spiritual; and who thus, by such simple and tangible means, may get satisfactory and positive proof of those things so intimately interwoven and connected with the future existence and being of man.—I am, sir, your most obedient servant,

Edm. S. Lauder.

32, *Westmoreland Street, Dublin, 7th June*, 1869.

[Our correspondent mistakes the purport of our remarks on "spirit photographs" altogether, if he thinks we condemn or deride a thing because it is beyond the range of present knowledge. We should be sorry, indeed, to give up our belief in spiritual existences, but almost as sorry to be brought to believe that spiritual existences lent themselves to many of the meaningless trickeries associated with what is called modern "spiritualism." Our conviction of the production of "spirit photographs" being a hoax is based on the preponderance of evidence. No imposture of any kind in the whole history of imposture and delusion was ever palmed off on mankind without presenting something in the shape of evidence, or without finding some to accept the evidence, and many to say that they could not refute it. The preponderance of evidence, in our conviction, tended to prove the imposture, and the Photographic Section of the American Institute, consisting of men of science and amateur and professional photographers, passed a resolution stating their conviction that the investigation before Judge Dowling had proved the photographs to be the result of trickery. The Judge himself said he was "morally convinced that trickery and fraud were used," but that the evidence did not establish the matter legally so as to justify a conviction. We have seen some of Mumler's "spirit photographs," which have been declared to be good portraits of deceased persons, but which we positively aver to have been dim smudges, which only the liveliest imagination could invest with resemblance of any kind, and possessing much less definite character than a black silhouette. When we were told that the indistinct smudges were likenesses, we could only say that the judgment of persons declaring such things likenesses had no weight or value whatever. Finally, let our correspondent understand that we do not say that spirits could not be photographed; but we say that any object of which an image could be projected by the lens on the sensitive plate could, we think, at the same time be seen by the human eye—a condition not usually supposed to pertain to spiritual existences in our day.—Ed.]

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on Tuesday, the 25th ult., at the Free Public Library, William Brown Street, the President, Mr. O. R. Green, in the chair.

After the minutes of the former meeting had been read and passed,

The Secretary read a letter from the Philadelphia Photographic Society, offering to exchange specimens, which some members present expressed a willingness to do.

The photographic excursion to Gresford on the 12th ultimo was remarked upon by several members. The day was fine, the results were, on the whole, successful, and a number of prints taken from the negatives were shown, Messrs. Henderson, Wilson, Phipps, Forrest, and others being the principal exhibitors.

There were on the table, in addition, a number of leaf prints, by Mr. Murray.

A photoscope, an invention intended to exhibit microscopic objects magnified 1,200 times, was shown by Mr. Forrest, who thought it might be applied to photographic purposes.

The following question, taken from the box, was replied to by Mr. Forrest :—For a medium-sized negative, is plate glass preferable to polished crown?

Mr. Forrest said that up to the size of 9 by 7 polished crown glass was the best; beyond that size the irregularities of surface made it objectionable, otherwise its natural and non-absorbent surface gave it the advantage. For large sizes patent plate glass was the best.

Mr. Green then read a paper "On Exposure" (see p. 271), and alluded to his experience with collodio-bromide plates. A vote of thanks was given to Mr. Green on the motion of Mr. Wilson, seconded by Mr. Forrest.

Mr. Mawdsley exhibited the results of varied exposures of collodio-bromide plates—one plate having received one and a-half minute, a second five minutes, and a third twenty-one minutes. In each case the result was good, the proportion of developer being somewhat altered to suit the requirements of each.

Mr. Wilson called attention to the toning solution of the double salt of chloride of gold and potassium, recommended by MM. Barreswill and Davanne. He had had two years' experience with it, and for economy, range of tone, and simplicity, it possessed peculiar advantages. The formula is as follows :—

Double chloride of gold and potassium	15 grains
Water	40 ounces
Chalk or whiting	60 to 75 grains

It is ready the following day, and keeps well. Each whole sheet toned will require half a-grain of the gold salt, and this may be conveniently added by using two drachms of a stock solution of fifteen grains in seven and a-half ounces of water.

Mr. Henderson again called the attention of members to the value of gum as a preservative, as mentioned in his paper of the previous month.

His remarks were confirmed generally by Mr. Phipps.

Two photographic excursions were resolved upon—one to Hartford on the 9th of June, and one to the Valley of the Weaver on a date to be arranged. For the latter trip Mr. Higgin kindly promised the use of a steamer to convey the party to Northwich.

Mr. Henderson gave notice that he should at the next meeting propose an excursion to Bettws-y-Coed in July.

The meeting was shortly afterwards adjourned.

French Photographic Society.

A meeting of the Society was held on the 7th ult., M. Balard, President, in the chair.

M. Froment exhibited to the Society three positive prints obtained by means of a process said to be simpler, cheaper, and more rapid than the ordinary method. M. Froment operates without a silver bath, and has recourse to no development or subsequent intensifying after exposure to light. More definite information on the subject was not given.

The Society resolved that a further explanation of the process should be demanded of M. Froment.

The same decision was arrived at in regard to a communication from M. Marcony, who, in forwarding some specimens, announced that they had been prepared by a new process, based upon the employment of carbonate of lime and nitrate of copper.

M. Sarony presented some copies of his photo-crayon portraits, the manner in which they are produced being described.

M. Unterneger, of Trente, forwarded a few photographs coated with varnish which is stated to be endowed with such protective qualities that pictures treated with it might remain twelve hours under water without suffering injuriously.

M. Blanc, fils, addressed a communication to the Society in reference to the addition of skies to stereoscopic pictures.

M. Clement Sans described a method of preserving negatives from which large numbers of impressions are taken.

M. Davanne read the following letter, which had been addressed to him by Mr. Blair :—"I have read in the photographic journals an account of a communication made by you at the last meeting of the French Photographic Society, in which you claim for M. Marion the priority of employment of albuminized paper as a transport for carbon pictures. I desire to inform you that I adopted (or, rather, discovered) this mode of transfer, which I have practised and published as far back as the year 1864. A reference to an article on this subject inserted by me in the *Photographic Notes* for the month of August, 1864, will bear out this statement. I would also remark that I have practised and published my method of transfer by means of coagulated albumen in the year 1867, as may be seen by reference to an article published in the *Notes* of the 15th June, 1867. It is easy to judge, therefore, from these dates, that neither M. Marion nor M. Jeanreuaud are in a position to claim the priority of invention; both these gentlemen have simply followed the course indicated by myself, in ignorance of what had already been done in England with regard to the subject."

At the close of this communication M. Davanne observed that the dates established a decisive claim in favour of Mr. Blair.

M. Gobert added that M. Jeanrenaud, in describing his process, had avoided the preference of all claims in regard to priority of discovery.

M. Edwards, of London, addressed a letter, describing modifications of the carbon process, the principal point being the preparation of the transfer material by floating upon a solution of gelatine to which alum had been added.

M. Aime Girard remarked that, by a strange coincidence, M. Despaquis had also addressed to the Society, in March and April, the details of a transfer process involving the use of gelatine and alum.

M. Puech called attention to the use to which the metal roller (employed in carbon printing) may be employed for ordinary mounting purposes.

M. Franck de Villecholes described a singular fact observed by him whilst recently varnishing negatives. He found that on applying the varnish to one of his films the latter disappeared altogether; he thereupon used an older varnish, and this he found to be without injurious action upon the negative.

M. Davanne stated that a similar accident had once happened to him, but it was not to the varnish, but to the pyroxyline in the collodion, that he attributed the destruction of the film. Certain pyroxylines are soluble in alcohol alone, and cannot, therefore, resist the action of alcoholic varnishes; the reason why the old varnishes of M. Villecholes left the image intact was, that the alcohol was not sufficiently concentrated to dissolve away the collodion film.

M. Laulerie announced that the photographic exhibition was opened officially on the 1st May, and that the Woodburytype process was in daily operation in the centre of the building.

M. Ducos du Hauron addressed a letter relative to a new process of heliochromy, of which he forwarded specimens.

M. Franck de Villecholes submitted a new description of paper suitable as a substitute for albuminized paper. He stated that the irregularity of the results obtained by means of the ordinary albuminized papers had led to various materials being experimented with, with a view to their substitution. The pictures he exhibited had been prepared by employing a paper in which the gelatine sizing had been completely coagulated, thus causing the image to be entirely superficial, and to possess a solidity which rendered it incapable of being removed by any subsequent washing or friction. The material was, in fact, a glazed chloride paper, rendered sensitive by means of a very weak silver bath, the prints being toned for a short time only in an ordinary but worn out gold solution. The advantages of employing paper of this description are, that greater regularity is possible in the appearance of the prints, that less silver and gold are used, and that it is possible to sensitize the paper some time in advance.

An apparatus denominated *Microscope solaire portatif et photographique*, manufactured by M. de Tourneruine, was exhibited and described by M. Borie. It may be used for various purposes: for enlarging, for micro-photography, for astronomical photography, as a solar microscope, &c.

A portable laboratory and camera, invented by M. Jonte, was likewise exhibited, and the details thereof explained; it was an American invention for working the wet process in the field.

The proceedings then terminated.

North London Photographic Association.

The usual monthly meeting of this Society was held in Myddelton Hall on the evening of Wednesday, June 2nd, Mr. G. **Wharton Simpson** in the chair.

The minutes of a previous meeting were read and confirmed.

A letter was read from the Corresponding Secretary of the Philadelphia Photographic Society, proposing a system of exchange of photographs. The subject was postponed for consideration or action during the next session.

Mr. **Griggs** showed some fine examples of photo-lithography produced by himself, and some by Tessie du Motay, Marie, and others.

Mr. **Taylor** exhibited a zirconia cylinder and a magnesia cylinder, intended for burning with the oxyhydrogen light instead of the ordinary lime cylinder. In answer to questions, Mr. Taylor said that the zirconia light was inferior in actinic power to the lime light, being slightly redder in colour. The magnesia cylinder gave a better light than the zirconia light, but still not quite so good for photographic purposes as the lime light. The advantage to be derived from the use of a cylinder of zirconia, or one of magnesia, was that either of them was very durable, and did not require constant renewal like the lime light.

Mr. **Calloway** exhibited some prints produced, he said, by a modification of Mr. Simpson's collodio-chloride process. It consisted in adding kaolin to collodio-chloride of silver, and applying it to plain glass or mica. The white material thus added produced a white film, giving a picture, after printing in the usual way, with a fine dead white surface, possessing many excellent qualities. He also exhibited some fine prints on paper prepared with gelatine instead of albumen, and some good examples of printing on Durand's permanent sensitive albuminized paper.

After some conversation on the subject, some votes of thanks, and a discussion as to the best mode of securing good papers and interesting meetings during next session, the meeting was adjourned until the first Wednesday in October.

The Photographic Society of London.

The usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, June 8th, Mr. J. **Glaisher**, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed, after which the following gentlemen were duly elected members of the Society; Mr. Frederick Wolff, and Mr. Wm. Ackland.

Mr. **Spiller** (Hon. Sec.) read a brief paper on the Protection of Photographs by the Process of Parchmentizing the Paper on which they were Produced, and exhibited some of the prints which had been treated in this way twelve years ago by Mr. Crookes.

The **Chairman**, in proposing a vote of thanks, expressed a conviction that the results exhibited gave the subject considerable interest, and suggested that such a means of securing permanency was worthy of further consideration.

The **Secretary** called the attention of members to some fine collodio-albumen specimens by Mr. Davis; to some fine prints, by different processes of mechanical printing, by Mr. Dallas; to a fine portrait of Dr. Wright, from a negative by Dr. Diamond, printed by Mr. Eliot; and to an unusually fine selection of prints, by Mr. F. Goode, taken during his recent Eastern tour

Mr. **Johnson** then proceeded to a practical exposition of his mode of carbon printing, mounting, developing, transferring, &c., with celerity and certainty a number of very excellent carbon prints in the presence of the members.

After a vote of thanks, proposed in complimentary terms by the Chairman, and a response from Mr. Johnson,

The **Secretary** read a paper on the Gum-Gallic Process of Mr. R. Manners Gordon, which was illustrated by some excellent negatives by the process.

Mr. **Gordon**, in response to an invitation by the Chairman, said he had but little to add to the paper, which was a clear exposition of the process. It was a very certain and a very easy process. Having tried a large number of dry processes he had no hesitation in saying it was the best he had tried. It was not, of course, so quick as the wet process, requiring double the exposure; but it kept for months, either before or after exposure, without deterioration, and then developed without blemish or spot. The only difficulty he had experienced was with regard to the substratum: india-rubber solution, he feared, decomposed, and white spots appeared, which were, he was satisfied, traceable to the substratum. He had not tried coagulated albumen; but the uncoagulated was prejudicial, both to the bath and the negative, having a tendency to retard development and produce fog, and it also caused blisters. The unprepared plate was better than this, for although the film became loose and was practically one large blister held by the edges, it did not produce blisters proper.

Mr. F. **Eliot** suggested the use of the material of which Mr. Johnson had recently spoken, namely, gelatine coagulated with alum.

Mr. **Johnson** said it might be tried, but probably the sulphate of alumina might produce some chemical action.

Mr. **Eliot**, referring to the decomposition of india-rubber, referred to an album of Dr. Diamond's he had recently seen, in which the prints, having been mounted with india-rubber, were now all loose, and also stained and brown from the india-rubber.

After a few words from Mr. Spiller, and a vote of thanks,

The **Chairman** called attention to some magnificent enamels by Mr. Henderson, and then adjourned the meeting until November 9th, when an exhibition meeting would be again held, to which he hoped all would contribute.

Talk in the Studio.

Royal Cornwall Polytechnic Society.—The annual exhibition of this Society will, we understand, open on the 27th of August, just after the close of the meetings of the British Association in Exeter, affording facilities for members to visit Cornwall. The following is the list of prizes offered for competition amongst photographers, and the arrangements which concern them:—For Professional Photographers—1. For the best portrait or group, a silver medal;—2. For the best landscape, a silver medal;—3. For the second best portrait or group, a bronze medal;—4. For the second best landscape, a bronze medal. The judges may, at their discretion, award a certain number of extra bronze medals. The prints must be untouched by hand. If vignetted, a full printed picture to be enclosed for the inspection of the judges. Competitors may exhibit pictures in each class, but no competitor to take more than one medal. Portraits and photographs must be sent direct to the exhibition, fully addressed to "The Royal Cornwall Polytechnic Exhibition, Polytechnic Hall, Falmouth." Any further information may be obtained, personally or by letter, on application to W. P. Dymond, A. L. Fox, Hon Secretaries, Polytechnic Hall, Falmouth. Mr. J. C. Stephens, of Falmouth, under whose charge this department was formerly placed, has no longer an official connection with the Society, but, in a letter to us, states that as a resident he will have pleasure in being of service to any brother photographer who may contemplate exhibiting.

Second-hand Apparatus.—In our advertising columns a sale of second-hand apparatus, &c., is announced for the 15th, at Puttick and Simpson's, Leicester Square, which will probably interest many of our readers, the effects having belonged to one of the most celebrated professional photographers, recently deceased.

Poisoning by Cyanide of Potassium.—A melancholy instance of poisoning by cyanide of potassium has just occurred in Dublin. The evidence given at the inquest upon the remains of Mr. Frederick Darley Grattan Guinness established that his death was caused by cyanide of potassium being substituted for carbonate of ammonia in a tonic stimulant prescribed for him to relieve heart disease, with which he was afflicted. The poison had been placed in the dispensing bottle bearing the label "Carbonate of Ammonia." The dose taken by Mr. Guinness was more than sufficient to kill the strongest man Immediately he had swallowed it, he exclaimed, "I am choking!" and was dead before medical assistance arrived. It was proved that on Friday evening, owing to hurry of business, the ammonia bottle was given to be refilled to a young lad, only seventeen years of age, employed as a storekeeper in the establishment, and he, unfortunately, filled it from a jar containing the cyanide, which closely resembled that in which the ammonia was kept, and which, in contravention of very stringent rules for the care of dangerous drugs, had been left out unlabelled.

Silvering Cast Iron.—M. Bœttger recommends the use of a bath prepared in the following manner:—Fifteen grms. of nitrate of silver are dissolved in 250 grms. of water, and 30 grms. of cyanide of potassium are added; when the solution is complete, the liquid is poured into 750 grms. of water wherein 15 grms. of common salt have been previously dissolved. The cast iron intended to be silvered by this solution should, after having been well cleaned, be placed for a few minutes in a bath of nitric acid of 1·2 sp. gr., just previous to being placed in the silvering fluid.—*Chemical News.*

Fixing Negatives.—Mr. Carey Lea, referring to the recent discussion on cracked films, says:—"As some have complained of the destruction of negatives fixed with hyposulphite of soda by time, a correspondent of the News brings forward a case in which a set of negatives, ten years old, fixed with hypo, were found in excellent order. No possible danger can arise from fixing with hyposulphite, if it be perfectly washed, and this washing out will always require a certain time, no matter how rapid the current of water may be. When water is scarce, so that a stream cannot be kept up for the needful time (five to ten minutes, according to size), it is better to distribute the water into four or five pans, and let the negative lie five or ten minutes in each in succession. The last pan, or even two pans of one negative, might be used to begin the next with. Where a stream is used, of course particular care must be taken that a ripple forms on every part of the film, to make sure that the water is everywhere in active motion. Even with this precaution, however, time is needed, because the film is not like blotting-paper, for which solutions can be 'displaced,' but it is like membrane, from which liquids must be removed by osmose, which is always far slower in its action than displacement."

To Correspondents.

E. D. S.—The cause of the albumen being dissolved from the paper by the silver bath is the weakness of the latter. In using a weak bath like that you describe, especial care is necessary to replenish it with silver from time to time, otherwise, when it becomes a little weaker than the standard strength, it readily dissolves the albumen. The substitution of about one-sixth of alcohol for water is desirable in a bath as weak as that you mention, and it is important to replenish with silver systematically, so as to provide for the constant waste of silver.

Yardley Slick.—Backing transparencies with plain white paper is not an infringement of Mr. Sarony's Patent. 2. We cannot tell you which. There are various modes of preparing the material for ornamental corners and mouldings; we believe that a mixture of plaster of Paris and size is often used. 3. It is probable that your bath requires a little more acid. Add to each pint one drop of nitric acid. 4. Read an article on the Emolliotype process, by Mr. Netterville Briggs, in our last Year-Book, for full instructions.

Novus.—Take the starch—Glenfield starch is best—and mix it into a paste with the smallest possible quantity of cold water; then pour boiling water upon the paste, stirring briskly until the right thickness is attained. About a teaspoonful of powdered starch will make a teacupful of paste, as it swells up enormously, and becomes very glutinous on adding the boiling water. 2. We do not know of any mode of protecting the surface of Obernetter prints; we have not found such prints peculiarly liable to injury. 3. To 6½ drachms of water add 1½ drachms of a saturated solution of protosulphate of iron, and you will obtain a 30-grain solution. 4. It is alleged that the use of ammonia-sulphate of iron, and also of sulphate of copper, in the developer, tend to the production of harmonious negatives. 5. It is probable that with Obernetter paper hypo as weak as one in ten might be used, but we generally use the ordinary strength of one in four, and immerse for a shorter time. 6. The numbers of the Photographic News containing Lake Price's articles on Composition and Chiaroscuro are out of print.

George Restall.—Undoubtedly; but we presume the matter is long past and done. We are glad to hear of your success, and sorry to hear of your bereavement.

T. Mitchell.—We have not had any personal experience with the rapid plates of the Birmingham Dry Plate Company; but we found, when we tried them some years ago, that, when in good condition, they were little inferior in sensitiveness to wet plates; and in the recent trial of various dry plates by Mr. Gordon and others, these plates were found to be as sensitive as wet plates. We do not remember precise particulars of the developer, but the formula you quote scarcely seems well suited to form a good developer, and the fact that it turned turbid confirms our view. Instead of adding 8 drops of 60-grain plain silver solution to 2 drachms of 30-grain iron solution, we should not have commenced with more than 1 or 2 drops at most of such a silver solution. After it had turned turbid, if it were then poured on the plate, being somewhat acid and inert for development purposes, it would tend to destroy the latent image, after which no subsequent application of developer would bring out an image.

R. S.—The probable cause of the sunken character of the image in your developed prints is the use of soft, absorbent paper, instead of a hard, non-absorbent sample. In printing by development, very much depends on this. We prefer a formula into which a chloride enters, as generally giving a cleaner, more vigorous image; but with the formula you quote, if you use a hard-surfaced paper, floating it only a short time on the salting solution, a short time on the silver solution, and avoiding over-exposure, we have no doubt you will obtain vigorous prints. 2. Card lenses will do well for instantaneous stereo work.

J. F. F.—The article on enlarging in our last Year-Book is devoted rather to the consideration of various formulæ than to initial instructions on the subject, as it is presumed that the reader knows how to set about the work. When you tell us that you do not understand how to enlarge, without telling where your special difficulty is, we scarcely know how to help you, because we do not know how much or how little you know of the subject, and it would be impossible in this column to give you full instructions. As a rule, in purchasing a solar camera, you should receive printed instructions for arranging it and setting about your work. We may very briefly indicate what must be done. The solar camera should be fixed to the window of a room with a south aspect, capable of having all light excluded except that passing through the camera. The reflector should be arranged so as to throw the image of the sun direct on the condenser. The latter should be placed so as to bring its focus, forming a sharp image of the sun, on the front lens of the enlarging lens. The negative should be placed in its groove, and an image thrown on the screen placed at the proper distance. When a sharp image is obtained, place the sensitive paper on the screen, expose until a trace of an image is obtained, and then proceed to develop. If you have any special difficulty on any special point, describe it clearly, and we will endeavour to help you.

North and South.—Your general plan and proportions seem good. We should prefer, if circumstances permit, to have two or three feet more in width of room, and one or two feet more of glass in length of side-light, at least on the north side and top. The angle of roof will do.

John Otto.—Thanks for the excellent transferred negative and the description of the mode of intensifying, which shall appear in our next. Which mode of transferring do you employ? A few of the Year-Books for 1861, 1864, 1866, 1867, are in print; the remainder are, unfortunately, out of print. We can let Messrs. Longman know which copies are in print, but it would be a simpler plan to send them to you by book-post. We are glad to hear from a Danish subscriber, and gratified to know that the News has been of service to you. Your English is very excellent.

An Amateur.—Thanks. The diagrams have been slightly reduced to scale, to make them fit our space.

Received: Pepper's "Cyclopœdic Science Simplified."

Several Reviews are compelled to stand over at present.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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ALKALINE DEVELOPMENT FOR DRY PLATES.

The admirable negatives shown as examples of dry-plate work with alkaline development by Mr. Howard, at the last meeting af the South London Photographic Society, gave a peculiar value to the brief observations he made on the subject of development in answer to an enquiry in the Question-Box. A general impression has prevailed amongst dry-plate workers that alkaline solutions for development were especially unsuited to collodio-albumen plates, as they involved great risk of fog, stains, and blisters. The negatives which Mr. Howard showed to members were produced, however, in every instance, on collodio-albumen plates, and the most striking illustration of the advantages of the alkaline method consisted in a collodio-albumen plate containing two negatives; that on one half received an exposure of two minutes, and produced a good negative by acid pyrogallic development; the other half received an exposure of ten seconds, and produced a negative, by alkaline development, scarcely, if at all, inferior to the other. One fact like this speaks volumes, and demands the most earnest attention of dry-plate photographers.

The plan employed by Mr. Howard is simple but methodical, and closely follows the order of operation described by Mr. R. Manners Gordon in our Year-Book for 1868. He prepares five solutions, which, for readiness of reference, we repeat here:—

I. A 3-grain solution of pyrogallic acid.
II. A 5-minim solution of ammonia.
III. An 8-grain solution of bromide of potassium.
IV. A 5-grain solution of citric acid.
V. A 10-grain solution of nitrate of silver.

Of these he takes, after moistening the exposed plate, sufficient of this pyrogallic solution (No. I.) to cover the plate, and adds to it a few drops of the bromide solution (No. III.), and pours it over the film. It is then returned to the developing-cup, and a few drops of the ammonia solution (No. II.) are added, and the plate again flooded. This at once commences the development, and gradually brings out a phantom image. This will proceed until all detail is out, but no intensity will be acquired.

And here is the fact to which Mr. Howard points as an especial advantage: development proper is completed before intensification commences. One great difficulty of the dry-plate worker has generally been to prevent a certain sparkling play of chalky lights on his picture: an absence of the quiet softness and harmony of a good wet-plate photograph. The operation of intensification has generally proceeded *parri passu* with the process of development. Prolonged application of the developing solutions has often been necessary to get out the details in dark shadows of foliage, and, with the peculiar tendency to aggregation in the deposit of silver, the lights, which commence to develop first, have been steadily acquiring density. The remedy has been to add silver to the developer very sparingly at the outset; but, with every precaution, it would often happen that the lights became too dense before the half-shadows were made out. Here Mr. Howard points out that development and intensification are divided into two distinct operations, each singly under control, the intensification not commencing until development is complete; and, besides, each being under control, each receives the photographer's undivided attention whilst it is in progress.

It should be noted that the mode of applying a little of the bromide solution to the film in conjunction with pyrogallic acid before the ammonia is added is found most efficacious in preventing fog. The ammonia is a rapid accelerator of development, but sometimes its action is so energetic that a trace of fog is initiated at the outset when it is applied to the plate, and this goes on increasing as development and intensification progress. The bromide applied first checks this tendency, but if applied in excess, or continued for too long before the alkaline solution is applied, it arrests development seriously, and sometimes stops it altogether.

The perfectly developed thin image having been brought out by the alkaline solutions, intensification proper begins, and, to make it safe and avoid risk of fog, the plate is not only well washed, but it is flooded with the citric acid solution (No. IV.). And now a somewhat novel principle of intensification commences. Increased density is obtained by the simple application of a mixture of citric acid solution and the silver solution (No. IV. and No. V.), a sufficient deposit of silver taking place without the use of pyrogallic acid at all. This method is analogous, we believe, to a method frequently employed with success by Mr. Gordon, in intensifying gum plates after iron development, but in that case requiring great care to avoid excess of density and occasional fog. Mr. Howard, in using it as described, mentioned no especial difficulty, but stated that in his hands, as a rule, alkaline development had been more successful than iron development of dry plates; and, as we have said, the negatives exhibited admirably corroborated the statement of success, at least, in Mr. Howard's own hands.

In referring to iron development, it may be worth while to mention here—since the question has recently been asked whether gum plates admit of alkaline development—that iron solutions were not originally used for gum plates. Mr. Gordon in the first instance used the alkaline method, and found it succeed very satisfactorily; he has since adopted iron as simpler, causing more perfect adhesion of the film, and almost entirely annihilating the defect sometimes called "blurring," a defect to which gum plates are somewhat subject. Whilst it secures these advantages, it also permits equally short exposure, and is, therefore, on the whole, for gum plates, the best mode of development.

CARBOLIC ACID IN THE PRINTING-FRAME.

Our attention has more than once of late been directed to the advantages of carbolic acid in the printing bath by correspondents who have tried it. The addition of 3 or 4 drops of the pure acid to a pint of the silver solution will, it is stated by more than one of our readers, arrest the tendency to form scum on the bath, will check discolouration of the solution, and retard the tendency in the excited paper to become brown on keeping a little time after sensitizing.

The tendency in the printing solution to turn brown in the dark, and the readiness in sensitized paper to acquire a similar discolouration without the action of light, are always promoted by any disposition in the albumen on the paper to decompose; indeed, any tendency to decomposition in organic substances in combination with silver facilitates the reduction and consequent darkening of the silver. Carbolic acid is one of the most powerful agents in checking or arresting decomposition, hence its action in preventing discolouration and scum in the silver solution, which, having been in contact with the albuminized paper, has generally dissolved more or less of it, and also in checking, if not entirely arresting, the discolouration of sensitive paper when kept in the dark.

MODIFIED INTENSIFYING PROCESS.

We have been favoured by a Danish reader with a very perfect transferred negative, as an example of a modified plan of using the mixture of chloride of gold, ferridcyanide of potassium, and persulphate of uranium for intensifying. The negative is a reproduction of a page of the Photographic News, and is an admirable illustration of the kind of negative required for printing copies of black and white subjects: perfect clearness and absence of deposit in the transparent parts; perfect opacity in the dense parts. We have pleasure in printing our correspondent's letter, both as describing an admirable method of intensifying, and exhibiting a spirit of communication which is very gratifying. He says:—

"Mr. Editor,—The Photographic News has been of so great use to me in many of my amateur difficulties, that I would be glad if I, in return, could help only one of your other subscribers. The enclosed is sent on that account, to show the very great intensity to be had by an easy and prompt intensifier, which I never have seen mentioned before. I found it the other day by chance, when I would take a copy from a pen-and-ink drawing without being able to get the desired intensity.

"After developing and intensifying with iron, the plate is fixed with cyanide and thoroughly washed. Then, to a dilute solution of chloride of gold is added a few drops of the ferridcyanide intensifier, with uranium in excess. This is then poured over the plate, and off and on until the desired density is attained. A very dense black precipitate is the result. If too much ferridcyanide is present, the plate gets blue; and if not sufficient, gold red brown.—I remain, with respect, your Danish subscriber, "John Otto."

"*Bernstorf by Copenhagen, June 6th*, 1869."

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 2.—Salomon Prints.

As a commencement to the subject to be considered in the present article, it may, perhaps, prove interesting if, by way of introduction, I make a brief allusion to that remarkable period in the history of photography when the followers of the art were startled from a slumber of complacency by reports which found a trumpet-tongue in the widely-circulated columns of the daily press, in which was announced, in terms of unreserved eulogy, the existence, in the photographic department of the late Paris Exhibition, of certain gems which thrust completely into the shade the most famous productions of the most famed among English photographers. The glowing descriptions given by the press soon acquired additional strength from the endorsements of independent eye-witnesses, whose testimony was received doubtingly by some, with absolute incredulity by others, whilst many, preferring no man's eyesight to their own, suspended judgment until such time as they could see for themselves. Nor had they long to tarry ere the wished for opportunity was provided by the exhibition of the London Photographic Society for 1867. It will be remembered that on the occasion alluded to a number of specimens, courteously supplied by the great French artist, were made subjects of almost microscopic examination and ill-disguised jealousy, which gave voice in ill-tempered and ungenerous criticism. The pictures, however, afforded proof unchallengeable of their immense superiority as they hung proudly conspicuous and alone in their massive grandeur, which forced from every unbiassed observer the confession that nothing so perfect had hitherto been produced by King Sol; and that conviction grew so rapidly among photographers generally, that the sedative influence of time was scarce needed to eradicate the suddenly acquired feelings of envy. The Salomonesque exhibition of last year gave ample proof of the homage ultimately paid M. Salomon by those who proved themselves capable of appreciating his great genius, and the admirable display of pictures, the imitations, were a practical recognition of the superiority of the French artist's masterly productions.

Much has been written conjecturally to account for the ways and means by which the prints exhibited by M. Salomon were produced, and if half which has been said by way of explanation be true, France has much reason to congratulate herself for having given birth to the most perfect genius that ever astounded the commonality of this or any preceding age, for not only must M. Salomon possess the most facile pencil ever discovered, but his genius must be so wide-reached as to grasp intuitively the whole chemistry of an art which has baffled the painstaking researches of an army of investigators. Thank goodness, the time has arrived when the crop of absurdities raised on jealous soil might be lost sight of, allowing the matter, in its common sense bearings, to be discussed; and we have only to rest our thoughts on reasonable premises to arrive at a solution of a by no means formidable problem. That M. Salomon's productions stand conspicuous in point of excellence, but few would be inclined to dispute. The great artist has now imitators many, but equals, none. This fact, however, does not prove the impossibility of beating him, even on his own ground; and as there are probably many at this moment who are making praiseworthy efforts in the direction indicated, the mite of assistance I can render may, to such, prove acceptable, and, I trust, in some degree profitable.

I have given much time and thought to the elucidation of the secret which enables M. Salomon to produce pictures so exceptional in richness of colour, vigour, and brilliancy, and, from a very minute examination of many pictures produced by the French artist, I am persuaded that the majority of the negatives produced by him are "touched up" only in those essential points as are, in first-rate portraiture, unavoidable. I say unavoidable, because photographers make it a rule to conduct their in-door operations in a strictly diffused light, which is usually secured by an arrangement of blinds which effectually prevents any direct solar rays from entering the studio to play a local part. I am of opinion that a little mechanical ingenuity would enable Sol to complete his work without the aid of brush or pencil; but it would be out of place to dwell on a dodge conceived of, but not tested. I therefore proceed to reiterate that M. Salomon has recourse to limited touching in the majority of his negatives, whilst elaborate touching is practised in those few cases which form the exceptions. I have in my possession a good example of the much touched-up class, which readily affords to the initiated eye evidences of elaborate working upon.

And here, *en passant*, I would offer a remark with reference to the subject of "touching-up" negatives. There can be but little doubt that in this branch of our art we are outskilled by our Continental brethren. In lieu of pigments or ink, they use simply a soft lead-pencil. The negative is coated over with gum, which affords a "tooth" on which the pencil freely acts. When the touching is complete and satisfactory, the varnish is applied. I would apply a special caution to this question of varnishing the negative, because, in some instances, where the lead-pencil is employed for purposes of touching-up by English photographers, the dangerous method is resorted to of coating the varnish with gum. This reversed mode of working cannot be too strongly condemned, as it frequently occasions much trouble to the printer, more especially when the printing is executed in a damp atmosphere; the gum, being a hygrometric substance, yields readily to humidity, the coating rubs up, the lead and organic substances react upon the silver, and the surface of the negative becomes disfigured with innumerable non-actinic spots, which register their objectionable existence on the face of the prints. Even when the coating of gum is spplied before varnishing, I would advise a second coat of varnish, because I have seen and experienced instances where the red spots have appeared, possibly on account of the coating of varnish being too thin. At all events, having on more than one occasion been bothered with the difficulty, I would have my readers guard against it. I have abundant reason to exclaim with all the emphasis italics are capable of rendering: *Beware! varnish upon gum; never gum upon varnish.*

(*To be continued.*)

ON A METHOD OF PRODUCING ENLARGED TRANSPARENCIES WITH CRAYON-LIKE EFFECTS BY A SINGLE OPERATION.

BY A. L. HENDERSON.*

The subject of my paper this evening is a simple method of producing engraving or crayon-like effects in photographs; and should I be found wandering and introducing other photographic matter, pray be patient, and grant me a little indulgence.

When taking negatives purposely for enlarging, reproducing, or for transparencies to be viewed by reflected light, it is absolutely necessary that, to produce the best results, the negative should be sharp, thin, and full of detail—in fact, an unintensified iron picture.

I shall assume that I have got such a negative, and wish to produce a crayon-like effect in a transparency from it. I first take a piece of ground glass and hatch lines thereon, *à la Sarony*. This glass is placed against a window and a thin negative taken therefrom, reduced in size to suit the picture to be photographed. But bear in mind that what represents crayon lines should be perfectly clear glass. If it be desired that the crayon-like lines should be strong and dark in the finished picture, it may be necessary to slightly intensify the negative representing those lines, but in my experience I have found it unnecessary.

All that is now required is to place the negative with the crayon lines against the negative portrait and copy the whole together, vignetting the picture, if desired, in the ordinary way.

Another method of making crayon vignetting-masks is to place the ground glass containing the crayon lines against a window, then place a glass positive vignetting-glass in front, or a piece of black paper cut out the form of the figure to be photographed. A copy of this is to be taken in the camera.

We will now have a black or opaque margin with a transparent centre. The part emerging from opacity to transparency will have the hatched lines. All that is now required is to put the crayon vignetting-glass and negative together, as before described, and a transparency taken from it to the required size. This glass will answer for any other picture of the same size; or the crayon vignetting-glass may be made any size to suit the picture. This will, to a great extent, overcome one of the difficulties of the Sarony crayon portrait.

Here is a simple method of vignetting transparencies, which, I think, is more applicable for producing crayon vignetting-glasses, or for ordinary vignette glasses for paper printing:—

It consists of two long pieces of wood with slots down the centre, and bound together by a screw, so that it may be shortened or lengthened at pleasure. At the bottom of this piece of wood is attached a frame with another inner frame, sliding with a lateral movement. At the top of the sliding bars is a cross-piece of wood like the beam of a pair of scales, somewhat sharpened, so that when the sharpened edges are placed on a flat surface the whole machine will swing like the pendulum of a clock. I need scarcely say that the greater the swing while the exposure is going on, the softer will be the gradation. One curious thing in connection with this style of vignetting is, that the opening of the machine through which the picture is to be photographed acts as a diaphragm, and, as it were, opening and shutting itself and diffusing the focus of the image.

In conclusion, I may sum up the advantages of this style of producing crayon-like effects in photographs. Any size of picture can be taken from the same negative. The crayon lines will represent the same proportion to the figure by enlargement. A solar enlargement can be taken containing the lines, and great labour be thereby saved. Photographic dealers could supply, at a small cost, pattern crayon masks of all sizes and designs to suit the tastes of their customers. The same mask will suit any picture of a similar size. Lastly, the idea or process is not patented.

EXPERIMENTS WITH THE CARBONATE OF SILVER PAPER OF MM. SCHÆFFNER AND MOHR.

Communicated by H. Schwier from the Photographic Studio of the Royal Industrial Academy of Berlin.

This paper comes ready sensitized from the hands of the manufacturer, and differs from other materials of like description by its being albuminized paper and not collodion paper, and by its capability of being preserved for a lengthened period in the dark. The prints obtained with the material are very good, and appear, according to the specimens submitted, almost better than those furnished by ordinary albuminized paper. In order to form a more correct judgment of its merits, I have instituted several experiments with it, the results of which I have here set down.

The paper possesses the property of being serviceable only when its surface, or the printing-frame pad with which it comes into contact, has been submitted to the action of ammonia vapour. On this account MM. Schæffner and Mohr recommend the keeping of the pads for a short time in vapour boxes on the bottom of which has been placed some carbonate of ammonia.

To ascertain how far the paper is affected without treatment with ammonia vapour, I printed a couple of pictures in the ordinary manner. After an exposure of an hour and a quarter in direct sunlight, only a slight trace of an image became visible, a circumstance which tells in favour of the keeping qualities of the paper.

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* Read at a meeting of the South London Photographic Society, June 10.

A pressure-frame pad (of felt and bibulous paper) was now impregnated with vapour, by placing the former in an ordinary drawer, upon a perforated shelf, under which a saucer of liquid ammonia had been put, so that the vapour could readily permeate the felt; the same was kept confined for about half an hour, and was afterwards used with success throughout the whole of the day without being subjected to a second treatment.

A triple carte-de-visite negative was then placed in a pressure-frame, the carbonate of silver paper being placed under two of the images, and ordinary albuminized paper under the third. The result obtained was, that the ordinary albuminized paper printed perceptibly quicker than when not subjected to the influence of ammonia vapour, and that the Schæffner paper kept pace with the vaporized albuminized paper; the latter likewise acquired a reddish tone, although not to the extent exhibited by the carbonate paper. The period of exposure of the frames varied, in fine weather and a clear sky, from fifteen to twenty-six minutes. The more strongly the pads were impregnated with ammonia, the more rapidly was the printing conducted.

A second experiment was made with larger negatives of cabinet size, and a third with an architectural negative.

After printing, the proofs were washed, an operation which had the effect of imparting to the Schæffner prints a yet more pronounced reddish tint. The toning of the prints was conducted in different ways, partly with the ordinary borax gold bath, and partly with the new bath recommended by MM. Schæffner and Mohr. The ordinary gold bath was thus composed:—

Solution of chloride of gold and potassium in water in the proportion of 1 to 50	3 cub. cents.
Borax	1½ grammes
Water	200 cub. cents.

The Schæffner pictures toned in this bath with as much facility as ordinary albuminized prints. The new bath recommended for this paper is—

Sulphocyanide of ammonium ...	80 grammes
Acetate of soda	20 „
Common salt	10 „
Solution of chloride of gold and potassium in water in the proportion of 1 to 50	15 cub. cents.
Water	1,000 „

This toning bath may be preserved for some time, it being merely necessary to strengthen it periodically with a little gold solution.

On immersion in the gold bath the Schæffner prints, as likewise the ordinary paper, lost their colour, and assumed a deep yellow tint; the tone became so light that the image appeared almost to disappear, then it changed to a light grey, and by degrees to a darker tint. It is worthy of mention that pictures treated with Schæffner's bath may be toned after fixing. It is possible, therefore, to modify the tone of any fixed pictures which may appear capable of improvement after being fixed.

In conclusion, it should be stated that the carbonate of silver paper appears somewhat more prone to the formation of spots and stains than ordinary paper, and its albuminous surface is, moreover, more liable to become damaged in the operation of mounting. At the same time, it must be admitted that very thick albuminized paper, when sensitized in the ordinary manner, is more easily damaged than the thinner kinds of material, and Schæffner's paper is of a thick description.

Dr. Vogel adds the following remarks in reference to these experiments. He says:—"The favourable opinion expressed by M. Schwier in respect to the Schæffner paper we are able to confirm. The circumstances that the same is very similar to ordinary paper, and likewise that it may be employed as easily, speak very much in favour of it, as compared with collodion paper, the manipulation of which is both special and delicate. As regards injury from mechanical sources, the Schæffner paper is much superior, as it does not roll up, is mounted without difficulty, and appears to possess superior keeping qualities, from the fact that it is only rendered sensitive by the presence of ammonia vapour; neither is its cost higher. A sheet of this material, ready silvered, may be purchased in Paris (retail) for 65 centimes (6½d.); this is about the same amount to which a good sheet of sensitized albuminized paper would come, for if we estimate non-sensitized paper at 3d. per sheet, and allow thereto one fourteenth of an ounce of nitrate of silver, costing 3½d., the total will be exactly the same as the cost of a sheet of the Schæffner material."

ON THE PRESERVATION OF NEGATIVES DESTINED TO BE MUCH PRINTED FROM.

BY M. CLEMENT SANS.*

Landscape photographers who work the wet process are well aware that negatives, notwithstanding a coating of good protective varnish, often become unserviceable through the formation of minute spots after a certain period of continued employment; even when the varnish used is of such a quality that the occurrence of accidents to the film need not be feared, the exposure of the same to dust is inevitable; and small stereoscopic views from which large numbers of copies are required, once injured, yield nothing but prints covered with innumerable white spots. To restore negatives of this kind to their former state, it is necessary to remove the varnish, to wash them, and then again to varnish them. But for these operations the collodion film is not sufficiently strong; it becomes detached from the glass, and in this manner very precious negatives are sometimes destroyed, which it is impossible to replace.

For several years I have made a practice of subjecting my negatives to an operation which has had the effect of preserving them in good condition; thus I have some ten years old, from which several hundreds of prints have been taken, and all of them possessed of the same degree of clearness and beauty. In no work on photography have I seen the operation described, and my experience may therefore be of some practical value.

My manner of working is as follows:—The negative, finished and well washed (no trace of hyposulphite being allowed to remain in the film), is coated with the undermentioned solution:—

Water	30 cub. cents.
White of egg	30 „

Well shaken, and, when subsided, filtered.

The negative is allowed to dry spontaneously. Attention must be paid to the proportions of water and albumen employed, for if the latter is in excess, the film of collodion, when dry, has a tendency to peel off, especially if the same has been much worked during development.

The albumen having dried, the negative is plunged into a 15 per cent. solution of silver, the silver bath used for sensitizing being employed for the purpose, if necessary. The plate remains in the silver solution for a period of thirty or forty seconds—sufficiently long, indeed, to coagulate the albumen—and is then removed and passed into a bath of concentrated hyposulphite of soda. It is then again washed, dried, and varnished at a gentle heat with a solution of—

Benzoin...	5 grammes
Alcohol, rectified at 40° C. ...	100 „

When this coating of varnish has become worn out, it is removed by immersion in a bath of alcohol of the same strength as above, the negative washed, if necessary, and again varnished; it is thus again restored to its pristine beauty.

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* Read before the French Photographic Society.

ON A SIMPLE METHOD OF CONSTRUCTING PRINTING-FRAMES AND PLATE-HOLDERS.

BY M. KRIPPENDORF, OF AARDU.*

1. *The Printing-Frame.*—The square wooden copying-frames with spring fastenings possess many good qualities, which render them suitable for employment in large studios; for amateurs or small establishments, however, they have the disadvantage of being costly, bulky, heavy, and also of being slow in the operation of printing. It is more especially at the formation of an establishment that these points become apparent, and it is my intention, therefore, to describe a French form of apparatus of such simple construction that every photographer is in a position to manufacture it himself readily and quickly, and without appreciable outlay.

A stout sheet of glass of the size of the negative to be printed is warmed gently over a spirit lamp, and a coating of glue is then spread over one of its surfaces in as uniform a manner as possible. On this surface of glue is placed a piece of linen, cut to the proper size, and made to adhere to the glass, any folds or creases in the fabric being removed by the thumb-nail. Glue is a better cementing material for the purpose than gum, as the cloth or linen adheres more tenaciously to the glass. When dry, a diamond is drawn across the reverse side (the glass side) of the plate, so as to divide it lengthways into two equal portions, the linen backing keeping the two halves together, and acting in the capacity of a hinge. Finally, from a piece of cloth is cut a square of the size of the plate, and attached by means of glue to one of the halves of the glass surface; when this last application of glue has dried, the frame is finished. The sensitized paper is laid upon the cloth surface, the silvered side uppermost, a negative of similar size, or somewhat smaller, is laid upon it, and, by means of four American clips, pressed down against the frame. Light cannot enter if the cloth used is of sufficient thickness. Compared with ordinary pressure-frames, a frame of this kind possesses the advantages of not warping, and of being light and durable; by avoiding the employment of the usual square of plate-glass, the printing is conducted with greater rapidity, and involves less waste of time in examining the prints, and in opening and shutting the frames. An apparent evil is, that on the examination of prints, only half of the picture can be inspected, as the other half is unattainable, owing to the fixture of the cloth and the two American clips; in this respect, however, any difficulty may be obviated by the manner in which the negative is placed in the frame; by adjusting the negative in such a way that the more important portion—as, for instance, the head—is placed under the moveable half of the frame, the difficulty is at once overcome. Another and more legitimate fault in regard to the apparatus is the impossibility of employing the same, except with negatives of equal or somewhat smaller size; but inasmuch as six or eight of these simply-constructed frames may be put together in an hour, it would be easy to prepare such as are required for extraordinary sized plates.

2. *The Plate-Holder.*—We are among those who believe in the efficacy of plate-holders, not only on the ground of cleanliness, but, more especially, of necessity. Let any one essay the preparation of dry plates without a holder, and he will be at once a convert. Most plate-holders are made suitable for plates of all sizes, and are, therefore, inconvenient to handle, (as, for instance, the English screw-holder), or insecure in their application (as is the case with the pneumatic holder). The instrument I here describe is only suitable for plates of a certain size, but, at the same time, may be easily constructed, with but slight expenditure of time and money; and holders on this principle may, therefore, be prepared for the various descriptions of the plates.

Out of a stout cigar-box board two strips about three quarters of an inch broad are cut, of which one is about four inches longer than the breadth of the plate, and the other one an inch longer than the length thereof. The two strips are fastened together in the shape of a cross, in such a manner that the head of the cross is somewhat more than half the breadth of the plate distant from the centre of the cross. The plate is now laid upon this arrangement, so that it lies lengthwise upon the cross-pieces. Four points of support will now be found to be necessary, and these are afforded by four corks, of which two are at the ends of the cross-piece, the third at the head, and the fourth on the main branch. The plate must, however, not rest upon the corks themselves, but upon four small points, and, for this reason, we introduce a pin into each cork, and, cutting off their heads, regulate them so that the plate rests evenly upon them. By allowing the plate to slope obliquely, it would, of course, be liable to slip off, and, to prevent this, four more pins are taken, and stuck into the cork behind the first, so that their heads protrude above the plate. From these pins the tops are also removed, so that no point is present to which it is possible that a drop of liquid could adhere. With careful handling, a holder of this kind will keep for years, and alterations or modifications can at any time be made to it.

The above description is made in reference rather to landscape plates; for portrait negatives the points of support should be so arranged that the plates lies lengthways upon the longer branch of the cross.

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DECOLOURING THE PRINTING BATH.

Mr. Wm. England, in a recent number of the *Society's Journal*, describes the mode he has adopted with advantage to clear the silver bath. He says:—

"As a new method of decolourizing or cleansing the nitrate of silver printing bath may be of practical value to photographic printers, I hasten to lay before them a method which, after several months' experience, I have found of considerable value; and it is one which obviates the necessity of using kaolin, the trouble attending which, and the loss of material consequent upon its employment, every photographer well knows, and particularly those whose printing operations are conducted upon an extensive scale. The plan of treatment I now propose for adoption is as follows:—

"When the silver solution has become red or discoloured from repeated use, pour it into a porcelain evaporating-dish supported on a gas or other convenient stove, and raise the liquid to the boiling-point; continue the ebullition for ten minutes or a quarter of an hour, at the expiration of which time the organic matter will have been precipitated or destroyed. After subsidence and cooling down to the ordinary temperature, the nitrate bath, however much discoloured before this treatment, will be found once more quite clear and bright. If the solution should be required for immediate use after boiling and cooling, filtration can, of course, be resorted to in the usual way.

"Those who adopt this method will be surprised at the large amount of albumen which becomes dissolved by the nitrate bath during once or twice using, and which, by the simple method above described, will be coagulated and precipitated in the black deposit, which should not, of course, be wasted, but thrown into the receptacle for silver residues. I may also mention that it is necessary to measure the silver solution before boiling, so that an equivalent amount of water may be added to replace that lost by evaporation. If it be suspected that the bath is below the standard strength, the whole or a portion of the water may be omitted. I feel sure that those who once adopt this method of treating the discoloured solutions will for ever discard the use of kaolin, as being a much superior and efficient system of purification, less troublesome, and more economical."

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* *Photographisches Archiv.*

MANIPULATIONS IN CARBON PRINTING.

BY J. R. JOHNSON.

At the last meeting of the Photographic Society, after recapitulating the principles of carbon printing, before demonstrating, Mr. Johnson gave the following practical *resume* of materials and operations :—

"The whole of the apparatus and materials for printing on 6½ by 8½ plates is contained in the small box before you, of less than one foot of cubical capacity. It consists of

"1. A lamp-furnace and lamp.

"2. A hot-water bath.

"3. A cold-water bath.

"4. A dish for sensitizing.

"5. A dish for transferring, &c.

"6. The smaller utensils necessary in the process, such as thermometer, actinometer, '*squegees*,' brushes, pressure-frame, plates, &c.

"7. The tissue necessary for one hundred pictures, enclosed in a tin case.

"8. All the chemicals required in the process.

"The most important material of the whole is undoubtedly the 'tissue,' as this contains in itself, when made sensitive, all the materials of the picture. In this respect it is totally unlike albuminized paper, which is a colourless substance, having to be printed and dyed, and the dye again modified by toning; whereas the tissue here shown, when exposed under a negative, has only to be washed successively in warm and cold water to become a perfect print. As proposed to be sold for general use, however, it is insensitive, containing the gelatine, sugar, and pigment only, while the sensitizing agent, bichromate of potass, has to be added.

"When I say gelatine, I mean, of course, the very complex body sold under that name in commerce. We recognize at the least two very different substances in that compound—one soluble in cold water, the other insoluble in that fluid; and the relative proportions of these contained in the sample of gelatine employed for our tissue has an important influence on the result.

"I would here premise that all the tissue shown, whether in its normal state, or manufactured into prints, is simply pure carbon tissue; that is, the pigment is lamp-black in a fine state of division, and unmodified by either red, blue, or yellow colouring matter. I would therefore deprecate any comparison between the colour of the carbon prints shown, and that of the brilliant compound of gold and silver tinging the extreme surface of a layer of albumen. The former possesses qualities in themselves which have their peculiar merit; but they cannot be compared with something else which has entirely different qualities. The prints you see to-night are produced by nature working in Indian ink; they are the Indian-ink drawings of a transcendant artist, and it is with Indian-ink drawings that they must be compared.

"On a future occasion I propose to bring before you prints made with transparent pigments, chiefly lakes of madder, which are known to be absolutely permanent; and I shall then challenge a comparison with silver prints for transparency and brilliancy of tint, as well as for gradation of tone and delicacy of texture.

"And now for the practical operations :—

"1. The first operation consists in sensitizing the tissue. This is effected by floating it for one minute on a bath of bichromate of potash containing 1 ounce of the salt in 30 ounces of water.

"2. The sensitized tissue, thoroughly dry, is then exposed under a negative until a piece of silvered paper marks a tint of a light chocolate colour—say, about one-fourth of the exposure required for albuminized paper.

"3. The exposed tissue is then immersed in water, and laid, face downward, upon any impermeable surface. This is best done under water. If the print be intended to remain upon the surface upon which it is thus laid, that surface must be extremely clean and free from grease; but if the surface be employed as a temporary support, it must, on the contrary, be covered with a thin layer of wax, or wax and rosin, &c.

"In the present case we propose to use a temporary support, viz., a glass or metal plate.

"4. After the wetted print has been laid for a few minutes on the plate, it must then be developed by immersion in water heated to about 95° or 100° Fahr. The paper at the back of the tissue is removed after about one minute's immersion; and the soluble gelatine unacted upon by light is then washed away, leaving a perfect picture on the plate, which is finished by simple washing in cold water.

"5. If the print thus obtained be not intended to remain upon the plate, it is transferred by being brought into contact with paper coated with albumen or gelatine. If the gelatine-sheet be immersed in water containing a small quantity of alum, there is no occasion for subsequent immersion in a solution of that salt.

"6. For those who prefer a picture which shall be absolutely insoluble in boiling water, the print obtained on gelatinized paper must be immersed in a weak solution of shellac in aqueous ammonia. This penetrates the gelatine, and, becoming insoluble after the ammonia has volatilized, combines with it, and forms a compound upon which water, hot or cold, has no action. Or the shellac may be used in place of the gelatine, the solution being laid upon the paper and upon the print with a flat brush, and the two surfaces brought into contact.

"When the print with its attached paper has become perfectly dry, it usually falls from the plate which has acted as a temporary support, and only requires to be cleaned with a little turpentine to be complete. These, Mr. President and gentlemen, are all the operations necessary for producing the prints, which I now remove from their supporting plates and lay before you."

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THE GUM-GALLIC DRY PROCESS, AS PRACTISED BY RUSSELL MANNERS GORDON.

BY JOHN SPILLER.*

The process about to be described has passed the experimental phase and been already adopted by several distinguished amateurs, whose works were shown together with those of Mr. Gordon at the Society's exhibition in November last. High encomiums have been pronounced in favour of the gum-gallic system of dry-plate photography; and no one who has had the advantage of witnessing the manipulations, and seeing the finished results, could arrive at any other conclusion than that the process in question satisfies a want which is felt particularly at this time, the commencement of the out-door season of practical operations; it is not, therefore, necessary to rehearse the claims of this process upon your attention before proceeding to describe the main features of Mr. Gordon's mode of working.

In preparing the following instructions for the guidance of practical photographers desirous of adopting the gum-gallic process, it should be stated at the outset that considerable latitude may be allowed in the mode of conducting the several manipulations, and judgment exercised in varying, within moderate limits, the strength of solutions, and periods of washing and exposure, according to the season of the year, climate, and other circumstances. It is satisfactory to know that Mr. Gordon has succeeded equally well in working this process at home and abroad; we have it on record that plates were prepared at Madeira, in May, 1867, then packed with the usual precautions, and transmitted by the long sea-voyage to this country. They were afterwards exposed and developed upon Mr. Gordon's arrival in England at the expiration of three months, and gave perfectly satisfactory results. Illustrations selected from a large stock of gum-gallic negatives are now submitted for inspection; and some of these furnish evidence of the possibility of preserving clear glass, upon development, in those portions of the plate not exposed to light. This is particularly evident in the stereo-negatives with clear space between the twin pictures corresponding to the blackened partition in the camera. There is, indeed, a remarkable immunity from tendency to fog: so that it becomes possible for the operator to avail himself freely of the benefits arising from long exposure. No inconvenience has been felt on the score of blistering of the film, which Mr. Gordon seems disposed to attribute, in cases where it appears, to the employment of too thin a layer of india-rubber, or too thick a substratum of albumen imperfectly coagulated, applied as a preliminary coating—or to the use, perhaps, of an inappropriate solvent for the caoutchouc.

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* Read before the Photographic Society of London, June 8th.

Details for working with plates measuring 7¼ by 4½ inches:—

Preliminary Coating.—A solution of india-rubber in chloroform; strength 1 grain to the ounce. This dries immediately, and is preferred to the use of albumen.

Collodion.—The glass plate with its india-rubber film is then at once coated with collodion, and immersed, after the usual interval, in the silver sensitizing bath. With regard to the collodion, a suitable quality is prepared by adding 2 grains of bromide of cadmium, extra, per ounce, to Mawson's collodion for iron development; or to 6 drachms of the normal collodion of the same maker may be added the following sensitizing solution:—

Alcohol (sp. gr. 805)	2 drachms
Iodide of cadmium	3 grains
,, ammonium	1 grain
Bromide of cadmium	1 ,,
,, ammonium	1 ,,

If it be desired to prepare collodion specially for this purpose, take, as the maximum proportion,

Ether	4 grains
Alcohol (sp. gr. 805)	4 ,,
Iodide of cadmium	3 grains
,, ammonium	1 grain
Bromide of cadmium	3 grains
Soluble cotton, about	6 ,,

Instead of the last-named ingredient, Dr. Liesegang's "papyroxyl" may be employed; but it will not carry so high a proportion of sensitizing salts; the iodide of ammonium should then be omitted. In any case use a

Silver Bath, of strength not less than 40 grains to the ounce, and as nearly neutral as possible. Time of immersion in this bath ten minutes, or fifteen minutes, if the highly charged collodion be employed.

Washing the Film must be accomplished by removing the sensitized plate into two successive dipping-troughs filled with distilled water. Streaks are caused by attempting to wash under a tap. When taken from the second trough, the plates require to be immersed for about two hours in a comparatively large bulk of distilled water; and Mr. Gordon employs for this purpose a very convenient form of apparatus—a large dipping-bath made entirely of ebonite, with close-fitting cover, and inner rack grooved so as to hold eight or more plates. The rack is suspended within the bath by means of a hook whilst the plates are being introduced, and, when charged, let down to the bottom, the glasses themselves resting upon two round bars or cross-pieces so as to permit of free diffusion. Finally, flush with distilled water from a washing-bottle, and apply the preservative. Common water may be used for the prolonged immersion if it be afterwards displaced from the film by pure water.

The Preservative is composed of

I.	Gum arabic	20 grains
	Sugar-candy	5 ,,
	Water	2 drachms
II.	Gallic acid	3 grains
	Water	6 drachms

The latter is prepared with the aid of heat, mixed with I. in the proportion indicated, and filtered through sponge at the time of application. Air-bubbles should be avoided by inclining the sides of the recipient vessel at such an angle as to prevent splashing.

For each plate half an ounce of the gum-gallic preservative will be required; apply 1 drachm of this for the purpose of ridding the film from water, and follow up with the remaining 3 drachms worked over the plate for about a minute, then poured off and the glass reared up to drain. This last operation is facilitated by standing the plates upon small dice-shaped tubes of glass, through the centre of which a morsel of blotting-paper is passed, which can be renewed without disturbing the plate, which rests merely at one corner in a small circular cavity drilled through the glass. The dimensions adopted in this useful little contrivance are one inch cube, with aperture on one side of about half an inch in diameter.* Failing this special glass rest, miniature tumblers may be employed if supported rigidly by being let into the base-board of the drying-chamber; the top corners of the plates are invariably supported against glass faces whilst draining; and each niche is numbered for convenience of preserving memoranda relative to the preparation of the plate.

The Drying-Chamber is an ample wooden box or cupboard with all joints made light-tight, and a movable shelf for the accommodation, if necessary, of a double series of plates; it has a ventilator at the top bent twice at right angles, like a magic-lantern chimney. In damp weather a small tin can of hot water should be placed in the middle of the drying-chamber; but, as a rule, in summer time, this will not be required. The time ordinarily occupied in drying the plates is ten or twelve hours; the film then appears transparent, and, to prevent blurring, must be backed with pigment.

Backing of the Gum-Gallic Plates.—Quantity for preparing eight plates. Take

Burnt sienna, ground in water ...	100 grains
Dextrine	30 ,,
Glycerine	2 minims

The adddition of a trace of carbolic acid prevents fermentation of this mixture, which can then be charged into collapsible tin tubes, so as to be ready for use at any time. The dry plates being rested in the dark slides, or carriers, are brushed over the back with this pigment, leaving a narrow margin all round to prevent the possibility of its creeping on to the face of the plate. When dry, the carriers may be closed and packed for transmission.

Exposure in the Camera.—Give twice, or, better, three times the period required for wet plates. As already stated, the plates will bear long exposures without much detriment; and the error should always be on this side, since the development can, if necessary, be moderated.

Development.—With wet sponge remove the pigment from the back of the plate. The margin of the negative is then painted, for about 1·8 inch all round, with a thick solution of india-rubber in benzole or chloroform. Immerse in *dipping-bath* of ordinary water and flush twice with distilled water, to get rid of the preservative. Apply then the developer, compounded as follows, the first being a stock solution:—

I.	Gelatine	64 grains
	Glacial acetic acid	2 ounces
	Water	14 ,,
II.	Sulphate of iron	25 grains
	Water	1 ounce

For use mix 1 part of the gelatine solution with 3 parts of the iron; take half an ounce for each plate, adding 2 drops of a 30-grain solution of nitrate of silver, and increasing the amount of silver by 2 drops at a time as the details come into view. Intensify with any of the ordinary citro or aceto-pyrogallic intensifiers. Two grains each of pyrogallic and citric acid in an ounce of water will answer.

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* These are procurable at Messrs. Murray and Heath's, Jermyn Street.

Fix with hyposulphite; and subject the negative to a supplementary treatment with pyrogallic and acetic acids, more for the purpose of changing the colour of the deposit than of adding to its substance.

Blurring may be prevented, or reduced to a minimum, by the addition of 10 drops of glycerine to each ounce of the gum solution. With this modification the film will not become transparent on drying, but will work very much like wet plates; they will not, however, keep good for more than a fortnight.

The foregoing description contains, it is believed, a full statement of Mr. Gordon's plan of operations, which may be conducted almost with the same facility as here described, and will be found to give results of almost unerring certainty—so much so that Mr. Whiting, who has favoured us with an independent account of the gum-gallic process as worked by himself, states that, out of a parcel of eighty plates exposed by him last summer in Scotland, only *six* failed to furnish good printing negatives on his return. It should further be mentioned that the employment of ordinary collodion, immersed for the usual time in the ordinary silver bath, washed *once* with distilled water, and then under a tap, will give successful results; but such dry plates will not keep so long nor be equal to the standard of excellence attainable by the above process.

PERSPECTIVE AND PHOTOGRAPHY.

BY AN AMATEUR.*

We have seen that the apparent length of all lines is in inverse proportion to their distance from the eye; and this rule applies to the lines in the picture compared with the same lines in the object, if the latter are in planes parallel to that of the picture; but the apparent length of any line in the picture, when it is seen from the right point, is the same as that of the same line in the landscape; therefore their real size is in direct proportion to their distance from the eye. For instance, if the length of any line in the landscape is equal to its distance from the eye, the length of that line in the picture will also be equal to its distance from the eye. Let us apply this rule to the diagrams. In fig. 1 the nearest division has been drawn at a distance of six feet from the eye—that is to say, at a distance equal to its width—therefore the distance of the picture from the eye, in order that it may be seen correctly, must be equal to the width of the division in the picture. If it be so placed the perspective will appear correct—that is to say, that the picture will then appear to represent a series of divisions at an equal distance from each other.

Figs. 2 and 3, having been drawn from a distance equal to the *height* of the object, must be looked at from a distance equal to their own height; in other words, fig. 2 must be looked at from the same absolute distance as fig. 1, for it is half as high; and fig. 3 must be seen from twice that distance, in order that the perspective may appear correct. Suppose, now, that we look at figs. 1 and 2 from double the proper distance—that is, from the right distance for looking at fig. 3—what will be the impression given? The height of fig. 1 will now be equal to its distance from the eye, and it will therefore represent an object whose height is equal to its distance from the eye. The figure shows that the height of the division is twelve feet; it will therefore appear to have been painted from a distance of twelve feet. Now, the second division is drawn of half the height of the first, and will therefore appear to have been twice as far off—that is to say, twenty-four feet distant—and if we deduct twelve feet for the apparent distance of the first from the eye, the distance between the first and second division will appear to be twelve feet instead of six feet, which it really is.

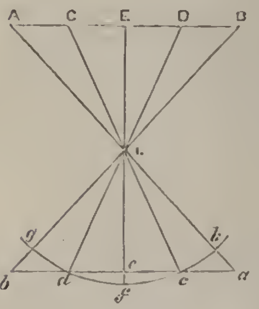

FIG. 6.

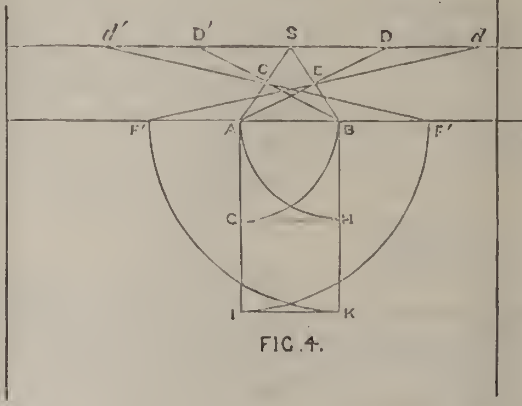

FIG. 4.

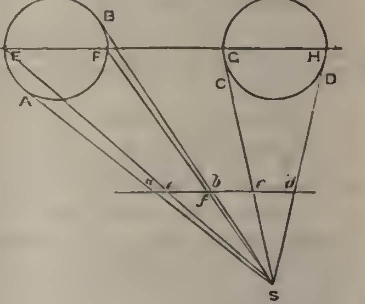

FIG. 5.

The height of fig. 2 will be equal to half its distance from the eye, and it will then represent an object whose distance from the eye is equal to twice its height, or twenty-four feet. The second doorway, being of two-thirds the height, must appear half as far again as the nearest—that is, at thirty-six feet. Therefore the apparent distance apart of the two divisions will be twelve feet, as in fig. 1. Thus we see that if the diagrams are held twice as far from the eye of the observer as they were from that of the draughtsman when they were taken, the squares of flooring lying between the first and second divisions no longer appear square, but twice as deep as they are wide.

The laws of perspective also teach us that if we look at a picture from double the correct distance, this is exactly the effect that will be produced. In fig. 4, let ABEC be the picture of a parallelogram, seen in perspective, S being the point of sight towards which the sides AC and BE converge. First, let the picture be seen from a distance equal to the width of its base, AB. On the horizontal line drawn through S mark SD and SD′ = AB, and draw DEA, D′CB. With the centres A and B and distance AB, describe the arcs AH and BG, and join GH. The square AGHB is the figure represented in perspective by ACEB when it is seen from a distance equal to AB. Now let us see what the figure ABEC will represent when it is seen from twice that distance, the point of sight remaining the same. Mark S*d* and S*d′* = 2 AB, and draw *d*EF and *d* CF′. From the centres A and B, and with the distances AF′ and BF, describe the arcs F′I and FK. Join IK. The parallelogram AIKB, whose length is double its width, has now become the figure which is represented by ACEB.

It has, therefore, been shown by the rules of geometry in figs. 1 and 2, and by those of perspective in fig. 4, that a correctly drawn picture will not truly represent the object from which it was drawn, unless it is seen from the same distance as the painter's eye was when he painted it, or the lens when it photographed it; but that if the picture is held too far from the eye, objects at different distances will appear too far from each other, while if it is held too near, they will also appear too near to each other, and it might easily be shown that the amount of this error in the apparent distance of objects from each other is in exact proportion to the error in the distance at which the picture is held from the eye.

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* Continued from p. 284.

Comparing fig. 2 with fig. 1, we observe that the *apparent* incorrectness of the former is less obtrusive that that of the latter. I attribute this to the fact that, owing to the distance of the object being greater, the nearer division is not, in proportion, so much larger than the other as in fig. 1; hence distant views may be taken with very short focus lenses, and looked at from a convenient distance without much apparent distortion: for instance, if a picture of two posts, the one at forty and the other at forty-one yards, be examined at twice the proper distance from the eye, they would appear to be at forty and forty-two yards distance; but the false effect would be less perceptible than if they had actually been at five and six yards from the eye, and appeared in the picture to be at five and seven.

The first conclusion, then, with regard to the choice of lenses to which I am led, is this: if we wish to obtain a picture whose perspective shall appear true when it is held at a convenient distance from the eye, and to include near objects, the lens should not have a focal length of less than six or eight inches, that being the shortest distance at which a person who is not short-sighted can comfortably examine a picture, and a rather longer focus would be still better. The correct distance for looking at fig. 3 is only about three nches, and it does not give the right impression unless it is looked at from that distance; but the effect is better than that of figs. 1 and 2, which require to be looked at from one and a half-inch. We now understand why in pictures taken with short focus lenses the distant mountains appear so small; and it may be that, because such pictures are looked at from more than their true focal length in the stereoscope, the different distances in the picture do not always appear to blend into one another as they should, but they sometimes appear as if they were upon separate pieces of cardboard, like the side-scenes of a theatre.

(*To be continued.*)

Proceedings of Societies.

South London Photographic Society.

The annual meeting of this Society was held in the City of London College, on the evening of Thursday, June 10th, the Rev. F. F. Statham, M.A., in the chair.

The minutes of a previous meeting were read and confirmed.

The Secretary then read the following

Annual Report.

Your Committee have much pleasure in submitting to the members of the South London Photographic Society their report for the session ending June, 1869.

The proceedings of the Society have fully borne out the hope expressed in last year's report, that the future might be "sunshine and success;" and this has resulted from the high degree of interest which has been shown by those members who have hitherto always given so much attention to its welfare.

Your Committee, in alluding to the fact of so few "papers" having been prepared and read during the past session, see no cause for regret on that subject, as the tendency of the day seems to be running into a closer examination of those points of detail which had not hitherto received so careful a consideration; hence the thoughts of many minds have been more desirable than the elaborate production of one.

Under these circumstances the "Question-Box" has proved to be a "step in the right direction" towards supplying matter for research, observation, and discussion; and your Committee refer with great satisfaction to the use that has been made of that vehicle for furnishing subjects of interest during the meetings of the past session.

The papers read have been by

Mr. C. Pearce—"On producing open-air effects in the studio."

Mr. J. T. Taylor—On a subject taken from the Question Box:—"Is it desirable for amateurs to practise out-door work with wet or dry plates exclusively?"

Mr. Henderson—"A simple method of producing crayon-like effects in portraiture."

Mr. Valentine Blanchard on one occasion made some valuable and useful viva voce observations upon the "stereoscope."

From the Question-Box the following have been introduced for discussion, by some exceedingly thoughtful remarks, viz.:

Mr. T. Sebastian Davis—"What is the cause of pinholes in dry-plate photography?"

Mr. Hart—"Which is the best way to convert gold residues?"

Mr. T. S. Davis—"Can plate glasses that give dirty images with ordinary cleaning solutions be thoroughly cleaned by other means?"

Mr. V. Blanchard—"What is the principle involved in the production of extreme sensitiveness in the collodion process?"

Mr. F. Howard—"Which is the best method of developing dry plates with respect to rapidity?"

And the following generally discussed—"It is said that a carbonate of soda toning bath will not do to be used over again: has anyone tried it, and how long?"

On two evenings the usual subjects, either artistic or scientific, have been superseded by, on one occasion, a very interesting exhibition of transparencies in the magic lantern, shown by Mr. How, during which the President, the Rev. F. F. Statham, made a running commentary upon everything exhibited; also, on another occasion, by a repetition of the exhibition meeting of last year, which also resulted in a highly interesting evening.

The Committee are indebted to the following gentlemen for interesting specimens, photographs, and apparatus, viz:

Messrs G. Wharton Simpson, Blanchard, Bockett, Henderson, Taylor, Howard, Pearce, How, Fox, Browning, Cobb, Bensa, Schmerl, Warlick, Hunter, T. Sebastian Davis, E. Cocking.

In conclusion, your Committee have to congratulate the Society on the increased number of new members during the past year, and trust that the motives which have induced them to enlarge the roll of members will also induce many others to join a Society which holds out such advantages for the acquisition of the earliest information, and the free discussion of all artistic and scientific matter in connection with photography.

The officers of the Society were then elected or re-elected as follows:—

President—The Rev. F. F. Statham, M.A., F.G.S.

Vice-Presidents—J. Sebastian Davis; G. Wharton Simpson, M.A., F.S.A.; Valentine Blanchard.

Committee—Messrs. F. W. Hart, J. Bockett, C. Pearce, J. Werge, C. E. Elliott, J. R. Johnson, J. T. Taylor, W. Cobb.

Hon. Secretary—Edwin Cocking, Queen's Road, Peckham.

Hon. Treasurer—Noel E. Fitch, 13, Union Street, Southwark.

It was then proposed, and, after some conversation, carried, that the annual meeting of the Society be henceforth held in December, instead of June, the subscriptions becoming due at the annual meeting.

After some conversation on various points of business, the summer meetings were discussed, and the President's invitation to the members to spend an evening with him at his residence, St. Peter's Rectory, 204, East Street, Walworth, was accepted for Saturday, the 31st of July, at 5 p.m. A meeting on September 25th was agreed on, to be held at Hampton Court, members meeting each other at the Mitre Hotel at 5 p.m.

After votes of thanks to the Hon. Secretary, the President, and Hon. Treasurer, and due acknowledgments,

Mr. Henderson proceeded to read a paper on "A Method of Producing Enlarged Transparencies with Crayon-like Effects by a Single Operation" (see p. 291), and exhibited various examples of the work in its different stages, and an ingenious arrangement for vignetting the enlarged transparency. He also exhibited some small transparencies backed up with ground glass mixed with gelatine, which gave a fine hard white backing.

After some conversation on the subject generally,

Mr. Cocking thought it was in some degree an objection to this kind of picture that the hatched lines of the vignette were not in harmony with the soft gradation of the continuous flat tint of the photograph. He had produced some similar results to those exhibited by Mr. Henderson, but was not satisfied with them for the reason he had just mentioned.

Mr. Blanchard held a similar view. He thought one of Mr. T. R. Williams' vignette heads, in which the gradation was of a true photographic character, was the true type of perfection in this way, and had a character which any method of mechanical gradation could not approach.

After a few words from the Chairman, and some conversation,

Mr. Wharton Simpson said it was undoubtedly true that the mechanical gradation of hatched lines was not in perfect harmony with the soft gradation of a continuous or flat tint which was the characteristic of photography; but it was not at all times easy for the photographer to secure a vignette of artistic design by the photographic gradation. It was also to be borne in mind that in the new style of picture there was an avowed intention to imitate the style of the crayon drawing as much as possible. This was to some extent effected by backing the transparency, with its photographic gradation, with rough crayon, which practically broke up that gradation somewhat, and made it assimilate to the style of the crayon drawing. The crayon-like effect was still further aided by the hatched chalk lines in the vignette. Whether crayon gradation or photographic gradation were more satisfactory might undoubtedly be open to discussion; but as many people liked crayon portraits, and as the new portraits very closely resembled them, the introduction had undoubtedly been beneficial to portraiture as a profession, and given a new stimulus to public demand in this direction.

Mr. Howard agreed with Mr. Cocking's remarks, and thought photography had qualities of its own equal to those of any mode of drawing, and therefore should not imitate drawings.

After some further conversation, and a vote of thanks to Mr. Henderson,

Mr. Howard opened the enquiry from the Question-Box as to whether acid or alkaline development were best for dry plates, which, notwithstanding the lateness of the hour, was thought to be of sufficient importance to discuss just at this season, when such a question became of great interest to all dry-plate photographers. Mr. Howard said—"To venture on the important discussion of the relative advantages of the alkaline and plain pyro development of dry plates would, at this hour, be doubtless very undesirable, but as we do not meet again till most of the opportunities for exposing dry plates will have passed, I would willingly, as it has been allotted to me, open the question by detailing my experiences of the advantage of the alkaline method of development. The negatives which I have brought to the meeting were prepared by the collodio-albumen process; but gum, tannin, and the washed albumen, or Fothergill processes, all admit of the same method of development. The solutions necessary are: (1) Plain pyro, 3 grains to the ounce of water; (2) 5 minims liquid ammonia to 1 ounce of water; (3) bromide of potassium 8 grains, water 1 ounce; (4) citric acid 5 grains, water 1 ounce; (5) silver 10 grains, water 1 ounce. By applying these solutions as follows, most rapid development will be effected, shorter exposure will be allowed, and, with care, no fog should be seen on the plate. After moistening the surface of the plate, pour over sufficient of solution No. 1, having 4 or 5 drops of solution No. 3 added to it. Now add 2 or 3 drops of No. 2, and the image will appear very rapidly, but will only develop, not intensify. The image having been well brought out, well wash the plate, and flush with citric acid solution. Having removed all trace of alkalinity, intensify with citric acid and silver, without pyrogallic acid. As regards advantages by the alkaline developer, you save time, the processes of development and of intensification are kept separate, shorter exposure is allowed, and, after a very little experience, there is no fear of fogging the plate. Mr. Mawdesley has described this method as very successful, and, in drawing the comparison of its advantages, if any, over plain pyro, I venture to say that it is a step on the ladder to rapid dry-plate photography."

Mr. Howard exhibited a number of fine negatives developed in the manner described, and called attention to one double negative in which the image on one half of the plate had received an exposure of two minutes and been developed with acid pyro, and the other an exposure of ten seconds and been developed with alkaline pyro, was not inferior to the longer exposed picture.

After some further conversation, and a vote of thanks,

Mr. Taylor exhibited a number of specimens of the new printing process recently described by Mr. W. T. Davies, of Edinburgh, also some of Mumler's "spirit photographs," some examples of posing with a leg-rest by Mr. Harrison, and some reproductions by photo-mechanical printing.

After some further conversation the proceedings terminated.

Photographic Society of Marseilles.

A meeting of the Society was held on the 5th ult., M. Tessiere, President, in the Chair.

The Secretary read a letter from M. Clement challenging M. Meynier's repeated assertions that the *Sel Clement* contained as much as 58 per cent. of magnesia, and complaining also that M. Davanno had countenanced the statement by designating the compound in question a *Sel Pretendu Economique.* M. Clement reiterates that the *sel* contains but 6 per cent. of magnesia (nitrate), that it contains nitrate of ammonia, and, likewise, that two organic bodies enter into its composition. In confirmation of his statement, M. Clement said that he was willing to have a quantitative analysis instituted to determine between himself and M. Meynier, and guaranteed the proportion of nitrate of silver in his *sel* to amount to 42 per cent.

The President requested M. Meynier to reply to the observations of M. Clement.

M. Meynier stated that he attached but little importance to the character of the compounds which supplemented the nitrate of silver in the making up of the *Sel Clement*; the principal point was the quantity of nitrate of silver contained in the material, and in this his statement was in accord with that of M. Clement.

The President desired to close the subject. According to his opinion, there presented themselves two ways of investigating the matter: a quantitative analysis might be made of the substance, or an investigation might be instituted to discover whether a pound of the *Sel Clement* produced as many pictures, and as good ones, as one pound of nitrate of silver. Neither of these methods of settling the dispute would, however, prove satisfactory, as superior keeping and other qualities were attributed to the *Sel Clement.*

M. Vidal was of opinion that a quantitative analysis would be useless, as both disputants were agreed upon the most essential point, viz., the percentage of nitrate of silver.

It was finally resolved not to proceed with an analysis, but to allow the matter to drop.

M. Davanne presented a copy of his *Annuaire* for the year 1869.

M. Pelissier presented some specimens obtained by means of strontium collodion and Liesegaug's papyroxyl. The collodion thus prepared was a very rapid one, and gave a clear, firm film.

Many members of the Society confirmed this opinion.

The Secretary distributed some specimens of black and albuminized papers for inspection and experiment. They were forwarded by M. Marion for carrying out that gentleman's process of carbon printing.

M. Vidal made a few remarks on the employment of these papers, and dwelt upon the importance of albuminized paper as a means of transport.

The President exhorted the members not to neglect a practical trial of the carbon process.

The proceedings then terminated.

Talk in the Studio.

Yellow Light.—A daily contemporary has the following curious paragraph:—"Carbonate of soda has been used for the production of monochromatic light to be used in photography. M. Guyot proposes kitchen salt as a better substitute, which may replace the yellow glass plates in cameras." The reference here is, doubtless, to the necessity of a nonactinic monochromatic light for the dark room, which the yellow flame of sodium supplies; but photographers will be puzzled, if they interpret the paragraph literally, to know how kitchen salt is to replace a plate of glass of any kind, as well as perplexed to understand the use of yellow glass in their cameras.

Transparent Paper.—In our last we described Mr. Blair's method of making paper temporarily transparent for carbon printing purposes. The *Stationer* states that "benzoine [query benzine?] possesses the property of imparting a perfect transparency to paper, which disappears after the evaporation of the liquid, and may, therefore, supersede the employment of transparent oil paper for designing. It is used simply by extending over the object to be copied a sheet of ordinary paper, and damping the latter with benzoine. This will render the opaque paper transparent, and enable tracing to be taken in pencil or Indian ink of the design, which is distinctly seen underneath. The benzoine soon evaporates, without leaving any trace of its having been applied, while the original design does not suffer the slightest injury. The smell also disappears in a few hours, if exposed to the air or to heat." The protection of the varnished surface of the negative by means of a gum, gelatine, or albumen coating will in all such cases be obviously necessary.

Mr. Blair's Carbon Manual.—We understand that Mr. Blair has still some copies of his Carbon Manual, which may be obtained at subscribers' price. He has favoured us with examples of several of the processes described, the prints on linen and those on transparent paper being especially interesting.

The Collodion Discussion.—In reference to this discussion we have received another letter from Messrs. Rouch and Co., distinctly stating that they do "follow Mr. Hardwich's formula for making pyroxyline most strictly in every detail, without any modification whatever." We have also received a letter from "Argus," stating that he was recently shown by Mr. Rouch a quantity of linen pyroxyline, which he distinctly understood was the material used in the manufacture of the collodion he at the time purchased. The discussion, as we have said before, is scarcely one of general interest; and when it issues in directly contradictory statements by parties in the discussion, it ceases to be pleasant as well as interesting. Messrs. Rouch and Co. give a distinct answer to our question, and state that they do use the same materials, in the same proportion, and at the same heat in making pyroxyline, as Mr. Hardwich, their only modifications on his formula being in the solvents and salts employed; and they are entitled to full credit for the facts stated. Mr. Blanchard, upon whose statement this discussion has been based, although he neither challenged nor invoked it, is in like manner entitled to full credit for his statement that his successful results were obtained by an entirely different formula, the failure of individuals in unwise discrediting a formula or process.

Photographic Popularity.—The photographic shops are always encircled by a crowd of gazers. And, of a truth, there is always plenty to look at there. Does an individual achieve celebrity? He or she is to be seen photographed all over town within a week. Notoriety? Same result. Infamy? Same result. Be a thief on a sufficiently large scale, and you shall have a prefix to your name; as "Mr." Higgs. Men and women of all classes, of all ranks, and of all sorts of characters, may be studied from the pavement. If a minister make a success, look out all the old portraits in stock, and put them in the window. Take his portrait again if you can induce him to sit for it, and label it "the last;" if you cannot induce him to sit, label anything as the last portrait of him. His rival on the other side of the house is also a good card to play, for it is of little importance to the sale of these wares whether their originals happen to have met with successes or reverses. It is sufficient that they are talked about at the moment. With actors, authors, royal personages, and all other public characters, the rule holds good. Furthermore, it is not even necessary to take the actual photographic portrait of the individual on brisk sale. Get somebody to draw any sort of portrait of him, and have it photographed. The public will buy it. If it be unlike him, the public will resent his being unlike his photograph, not his photograph's being unlike him. Perhaps the best harvest to be got out of any individual well known to the public is at the time of his or her decease. This harvest is not of very long duration, but it is very good while it lasts. Take your photograph, and frame it in a deep black border, and advertise it with as much clap-trap as you can compass, and you will sell a very satisfactory number of copies. The window of a large photographic shop affords a capital means of judging of the tone of the public mind at any given time. From the popular photographs it is easy to discern what sort of books are being read, what sort of plays acted, what sort of frivolity is for the time fashionable. An experienced Londoner, long absent from home, and with but an intermittent supply of newspapers, might say with certainty, from an inspection of the cartes-de-visite in the shop windows, what would be the prominent subjects of conversation at his first dinner party. When the fine weather sets in, the windows of those shops most set apart for photographs of scenery become terribly suggestive to the unfortunates who know that, by reason of work or impecuniosity, summer jaunts and autumn trips are not for them. There are photographs of all the places you would like to go to; and the more impossible it is for you to go to them, the more delightful are the scenes presented to your longing eye. Quiet English lanes, leafy Devonshire retreats, and fresh reviving sea beach, pleasant to think of in the dusty town. Further afield, lo! the grand Swiss mountains reposing on the glaciers which look (in the photograph) so easy to traverse, and which turn out such very different things when you try them. Dark silent pine-woods, shady and cool; rushing torrents, ice caves, snow fields—all things beautiful, picturesque, and unattainable—are mercilessly presented to the view of the compulsory stay-at-home. Let him take comfort. The same window that shows him these natural wonders, shows him also among the beautiful woods and by the placid waters of old Thames, at Maidenhead or Marlow, Pangbourne or Henley, holiday nooks easily within reach of limited time and limited cash. And if even these be beyond his reach, let him look his fill and be thankful that he can see their likenesses for nothing as often as he likes.—*All the Year Round.*

Alleged Incorrect Registration.—In the Court of Queen's Bench, on the 12th, an application was made ex parte Walker, in re Graves, to amend a registry of copyright in pictures. The application was under 5 and 6 Victoria, cap. 45, sec. 14, that if any person shall deem himself aggrieved by any entry made under colour of the Act, in the book of registry, he may apply to a court to order it to be expunged or corrected. The 25 and 26 Victoria, cap. 68 (which incorporated the former Act), provided for a registry of pictures, and under that Act the applicant had been convicted of piracy of some pictures registered by Mr. Graves, the well-known publisher of engravings. The entry related to an oil painting, "A Piper and a Pair of Nutcrackers," and two pictures by Millais, "My First Sermon," and "My Second Sermon," and three photographs, entitled "Waiting for the Verdict," "The Acquittal," and "Finding the Text." The main defect alleged in the entries was, that whereas Mr. Graves in each instance was an assignee, the assignor, or the party originally interested, had not registered—that is, that neither the author nor any subsequent owner or assignee until Mr. Graves himself had registered. The applicant having, however, been convicted upon the evidence of title afforded by these entries, and being now under imprisonment for his alleged offence, now claimed to have the entries struck out, as not warranted in law, nor sufficient to sustain the case against him. The Court had at first, on the supposed authority of the case of "Chappel *v.* Purday," dismissed the application, upon the ground that the Act did not apply, except as to persons really interested in the copyright or the title, and not to mere strangers; but as upon another report of that case it appeared that it had been misreported, the Court granted the rule, which now came on to be argued. Mr. Giffard and Mr. Poland argued for Mr. Graves, against the application. Mr. Underdown argued for the applicant, in support of his application to expunge the entry. The Court held that the entry of Mr. Graves's proprietorship was sufficient, and that there might be a copyright in a photograph from a picture, though there was no copyright in the picture. As to any defect in the description of the work, it might be amended.—Rule discharged.—*Times.*

Ink from Elder.—We are informed that an excellent permanent black ink may be made from the common elder. The bruised berries, being placed in an earthen vessel, are kept in a warm place for three days, and then pressed out and filtered. The filtered juice is of such an intense black colour that 200 parts of water only reduce it to the shade of dark red wine. To 12½ parts of this filtered juice, one ounce of sulphate of iron and the same quantity of pyroligneous acid should be added, and the result is an ink which, when first used, has the colour of violet, but when dry is indigo blue black. The ink is asserted to be superior in some respects to that prepared with galls, as it does not so soon become thick, and flows from the pen without gumming.—*Stationer.*

To Correspondents.

P. F.—Unless you drive off a portion, at least, of the acid by evaporation, you necessarily have in your solution a considerable amount of nitrate and chloride of some other base besides gold. If you prefer to use it in this condition, carbonate of lime is the best agent for neutralizing the acid. 2. When a commercial sample of chloride of gold is guaranteed to contain 50 per cent. of gold, the remaining 50 per cent. consists of the chlorine with which the gold is united, and hydrochloric acid, or chloride of sodium. 3. To coat the plate of a rolling-press with silver or gold so as to prevent rusting would require a tolerably thick coating, and as both metals are soft, they would readily scratch and wear. There are various modes in which a coating of either metal could be applied, the ordinary process of electro-plating being probably best. The mode of electro-plating is too lengthy an operation to be described properly in this column, and may be easily learnt from any of the little manuals published on the subject. A mode of coating iron with silver is described in our last. A silver plate for a rolling-press would not be sufficiently hard. 4. It is in accordance with general experience that exceedingly dry weather lengthens exposure. 5. The back focus of a portrait lens affords scarcely any indication of the relative time of working. The equivalent focus and aperture are the true guides.

T. Price.—We fear that the firm you mention is in difficulties, but have no certain information at present of the exact state of affairs, as the place of business is closed.

One who Tries.—Pyrogallic acid does not keep when dissolved in water, either with or without acid. To keep it in solution, the best plan is to make a very strong solution in alcohol, and dilute with water as required. 2. Short floating is, as a rule, the best, but a 90-grain bath is unnecessarily strong for most samples of paper, even with floating for one and a half minutes only.

W. A. R.—The appearance of the print indicates pretty good lighting, but the data does not, unfortunately, enable us to say whether the exposure was excessively long or not, nor, if so, where the fault lies. The light may have been very dull; the lens may be a very slow one, as, from the appearance of the picture, we suspect is the case; or the chemicals may not have been in very good condition. On the whole, we do not suspect the chemicals, but light and lens. A golden colour is generally a good tint for the collodion, but is no certain guide as to its condition. If it were slow, your best plan would be to get another sample, as you could not easily increase the sensitiveness of that you have.

Cosmopolitan.—It is somewhat difficult to obtain trustworthy information as to the need for assistance in especial branches of the art abroad. We occasionally have advertisements in our pages, and are at times appealed to personally to aid in securing skilful colourists for Canada. We believe that a good deal of good coloured work is done in Canada; and also in America coloured work is done to a greater extent than at present in this country. We can only suggest two definite ways of looking out for such engagements: one consists in watching the advertisements in our pages, and the other in advertising. Perhaps the last might be the most expeditious, but would be, undoubtedly, the most expensive.

J. B. C. Fox.—It will afford us pleasure to receive details of your projected experiments. Thanks.

A. R.—Your description is scarcely sufficiently definite to enable us to give you an answer. We have not seen any landscape photographs treated as you describe. There are modes, however, of colouring photographs roughly at the back so as to secure a very good effect, but we have only seen such plans applied to portraits. The modes have been described in detail in our pages. We may state generally that the mode of working consists, first, in making the photograph transparent, by soaking it in very hot water to remove the size, and then applying varnish or wax, and then roughly applying oil or water-colour at the back of the print. Possibly your description refers to photographs treated in this way.

H. Lambert.—We do not know much; but, so far as we do know, we have no reason to doubt the respectability of the person you mention. Probably the delay arises from the manufacture not yet being satisfactorily organized to supply the apparatus; and you will, we hope, eventually receive it all right.

Fifth Vol.—Views facing north, and consequently never receiving the sun direct upon them, nevertheless do receive the morning and evening sun sufficiently for good lighting, and either morning or evening should be chosen for such subjects. Ordinary portrait lenses and the lens you name are subject to central spot when used with a small stop and they are directly facing the light during exposure. Use as large a stop as you can, and shade off as much as possible of the light from the sky during exposure. No special chemicals are needed in such cases. As a rule, the shape of an interior lends itself to the necessities of a lens in definition; and it is well to avoid excessive exposure by using the largest stop you can with propriety. Collodions advertised as instantaneous, as a rule, are highly bromized, and keep well. The only trouble with them is, if used in dark interiors, and with small stops, they give—at least, some of them—very feeble pictures. The spots on the print you enclose appear to us to be caused by drops of solution standing on the film, and refracting the light. We have no doubt that they owe their origin to such a cause, but it is curious they should generally come when using a certain lens. It is probable that the lens in question requires long exposure, and so permits time for the action of the light on said drops. The magnesium light is occasionally used for interiors, but it has a serious difficulty: its fumes soon fill an interior with a dense white smoke, and so prevent any further operations.

J. C., N. A.—The minute yellow spots in the prints enclosed sometimes arise from different causes, but the most frequent is spots of imperfect fixation. This imperfect fixation is caused by the formation of minute air-bubbles on the print whilst it is in the hypo bath. These small bubbles protect the print from the complete action of the solution, and the imperfect fixation becomes manifest sometimes when the print is in the washing water, sometimes when the prints are drying, and sometimes not until after mounting. In a recent case which came under our attention, similar spots were due to particles of sulphur in the atmosphere, caused by the burning of bad coke in the printing-room.

Baynham Jones.—We addressed and forwarded the letter as desired.

Payne Jennings.—The print for registration has not been received. The other prints are delayed from press of other matter; not forgotten or neglected.

W. S. P. (Belfast).—We have published several modes of photographing on linen and similar fabrics. In our Year-Book for 1867, page 92, you will find instructions, and in the Year-Book for 1868, on page 98, another article.

Professor Morton.—Thanks. In our next.

Cemetry.—We cannot, unfortunately, give you information or advice on the subject of emigration, or in regard to the demand for and remuneration of photographers in America. Speaking in general terms, if you are desirous of emigration, it seems natural enough to suppose that some degree of demand will exist for portraiture in the rapidly growing towns of Western America, and each enterprizing portraitist stands his chance amid the competition likely to arise. The collodio-chloride prints you enclose are pretty good. We fear that we cannot help you in your toning difficulties, as we have not met with such ourselves. Another transfer process, which may suit your desires, will be published in our pages in a week or two.

G. Lewis.—We should not recommend galvanized iron or zinc for a cistern for water for photographic purposes. 2. The brown varnish used for metal cases, canisters, &c., is, we believe, sold as Japan varnish. It would answer for tin and metal-plate boxes.

Anxious.—A camera 9 by 9 will frequently be very convenient for use with a lens for 8½ by 6½ plates, as the little margin will be useful, and, with many subjects, will be covered. Of the two lenses you think of obtaining, the single landscape is preferable, and is the more rapid of the two.

J. C. Stephens.—Thanks. In our next.

The Collodion Discussion.—In answer to correspondents on this subject we have to suggest that a controversy on the limited question of the temperature at which pyroxyline should be manufactured is not of sufficient general interest to be further prolonged, especially when it assumes the form of directly contradictory statements. An extract from the letter of Messrs. Rouch and Co., and from that of "Argus," are given in another column. Mr. Fry wishes to state that he has received an anonymous letter on the subject, an answer to which is expected in the News. A reply will be sent direct if the writer will send his address to Mr. Fry.

Several Correspondents in our next.

Photographs Registered.

Mr. E. Parkinson, Mold,
Photograph of Railway Station in Mold.

THE PHOTOGRAPHIC NEWS.

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OPAL PRINTS ON PLAIN GLASS.

A Modified Collodio-Chloride Process.

We have recently been experimenting with an exceedingly elegant modification of the collodio-chloride process, by which white or opaline prints can be produced on plain glass. The modification in question is due to one of our correspondents, Mr. Charles Durand, who has given considerable attention to various ingenious variations in modes of photographic printing.

In the process in question a white pigment is introduced into the collodio-chloride of silver, and held in suspension somewhat in the same fashion as oxide of zinc is held in the gelatine employed in the Eburneum process, and when poured upon plain glass or mica produces a fine white sensitive layer, which is printed, toned, and fixed in the same manner as simple collodio-chloride of silver. It will be seen at once that a considerable range of effect can be produced. If very little pigment be introduced, a translucent white film is obtained, which renders some further backing of the glass or mica upon which the film rests necessary. This backing-up material may be white, and will then give an effect very similar to opal glass; the translucent white film being separated a short distance from the opaque white backing gives the soft diaphanous effect and general tint of the opal picture. If the paper used for backing be of a cream or buff tint, an effect very similar to that of ivory is obtained. A pink tinted backing gives a delicate rosy hue or flesh-tint to the picture; and so with other colours.

If a considerable body of the pigment be added, then, instead of a translucent white layer, we obtain an opaque white layer of singular purity and pleasing texture, resembling nothing so much as pure white marble, smoothed but not polished. The perfectly pure matt effect of the surface is exceedingly pleasing, and unlike almost anything else we remember in photography. Applied to plain glass the effect is very good; but, perhaps, nothing is more convenient than mica, especially for small pictures, where the sheets can easily be obtained perfect. The mica is, of course, as easy to manipulate as paper; and the opaline, or ivory, or rosy, effect obtained by different kinds of backing becomes exceedingly pleasing on mica. Applied to paper this pigmented collodion gives a singularly fine effect: a brilliantly white and perfectly matt surface is obtained, finer in texture than any paper we have seen, for some subjects especially effective.

For those skilled in the use of powder colours, here is the most delightful surface which can possibly be worked on. The surface has a tooth which *bites* the colour most perfectly, and the purity of the white gives a rare delicacy and brilliancy to the applied colours. By skilful manipulation and some knowledge of flesh painting, an effect resembling a highly-finished miniature can be obtained. A good print produced in this way on mica, and backed, to give warmth, with cream or buff-tinted paper, makes one of the prettiest, cheapest, and most easily produced portraits for a locket which can be desired.

The mode of preparing the pigmented collodio-chloride is simple. In our own experiments—following out those of Mr. Durand—we have employed kaolin as a readily accessible and neutral white pigment. Take for each ounce of collodio-chloride about a quarter of an ounce—or a tea-spoonful—of kaolin, and place it in a mortar or a jar, pour on it a little collodio-chloride, and, with a glass rod, form it into a paste; then add a little more to make it sufficiently fluid to pour, and mix the whole together and shake well. Then leave the whole to stand for an hour or two, to allow the coarser particles to subside. It may now be used without further delay, and will remain in a condition fit for use for a day or two. There is, however, a gradual tendency to subsidence in the pigment, and it will be found that the layer becomes more and more opaline and translucent the longer the pigmented collodio-chloride has been kept without disturbance. If it become too thin and transparent, the bottle may be well shaken, and again left for an hour or two to allow the coarser particles to subside. The best proportion of pigment, and the best condition for printing, a little experience will enable the operator to decide. If too little pigment be in suspension, the film is thin and transparent, and depends more on the backing up than on its own whiteness. If too much pigment be added, the blacks look sunken and grey, the colouring matter of the reduced silver being insufficient to cover excess of the white pigment, which is, in itself, of course, not darkened. A happy medium between a layer too thin and translucent, lacking sufficient force in the whites, and one in which the white pigment overcomes and buries the blacks, is not difficult to secure.

Kaolin, as a pigment, is not the most desirable on many grounds. It is not a fine or brilliant white, and it possesses very little body; but in relation to this operation it possesses the desirable quality of neutrality, and not in any wise affecting the collodio-chloride of silver chemically. Possibly there are other pigments which might, however, be substituted. It is possible that oxide of zinc—commonly known as zinc-white—might not act injuriously, and would form a finer pigment, which, having more body, would give pure whites with less of the pigment in suspension. We shall report shortly the result of a trial.

CARBON PROCESSES WITHOUT TRANSFER.

The transferring operations in carbon printing have been a bugbear to many photographers, especially to those who have neither seen nor attempted the manipulations themselves. A description of the detailed operations seem much more formidable than the work is found in practice. With all appliances for the work, Mr. Swan's plan was not difficult, and Mr. Johnson's is simplicity itself. Nevertheless, the possibility of carbon printing with half-tone without transfer is an attractive idea, and will, for many persons, especially amateurs or others with limited operations, be found useful in practice.

There are several methods of obtaining carbon prints in half-tone without transfer; nevertheless, each new announcement of such an operation is read with eager interest, and any novelty of idea in connection with the subject is frequently, and not unnaturally, perhaps, treasured as a secret, or protected by a patent. A case curiously in point has just occurred, where a supposed novelty has been patented. In the specification of a carbon process just patented by Mr. Pouncy, a method of obtaining prints without transfer is described, which appears to be identical with one we published upwards of two years ago, and which, we believe, for small operations, might still be found useful. Mr. Blair has published three methods of obtaining carbon prints with half-tone without transfer, with examples of which he has favoured us, each possessing points of interest and excellence of its own. Some months ago we noticed some examples we had received from Mr. Blair, described as produced without transfer, and by an unpublished process. The prints were very excellent, and possessed fine half-tone, showing, however, a slight amount of texture, which suggested, as we remarked at the time, that they had been produced by some method of printing through the paper. We now find that they are printed through paper made transparent by turpentine. The texture of the paper is, of course, visible, but very slightly so; and whilst it is sufficient to mar the delicacy desirable in a small portrait, and attainable in carbon printing by transfer, it is of a character which would not interfere with the beauty of many landscape and architectural subjects. We have examples of this mode of printing, both on albuminized paper and plain paper made transparent with turpentine; but we prefer the plain paper, as more artistic in texture and most in harmony with the kind of definition obtained by printing through the paper. An example of the method of printing on permanently transparent paper is very excellent in definition and gradation, but the lights are a little yellow with the varnish used in obtaining transparency, and the whites are distinguished by a want of purity common to carbon prints on tracing-paper and similar substances.

The method of obtaining prints without transfer, indicated by Mr. Swan two or three years ago, notes of which we published in the Photographic News, April 5th, 1867, is simple and effective in result. It is the same in principle as Mr. Blair's method, in which the paper is made transparent with turpentine, and the same in principle as that involved in the recent patent to which we have just referred: in each case the aim is to render the paper supporting the sensitive carbon layer transparent during exposure, and render it opaque again after exposure, so as to secure purity and vigour in the finished picture. Mr. Swan proposed to effect this by rendering the paper transparent with paraffin, and, after the completion of the picture, dissolving out the paraffin with benzole, and so restoring the opacity of the paper and securing pure whites in the print. It may be interesting here to reproduce, from our former article on this subject, Mr. Swan's note, which we then published:—

> Carbon printing through paper, as hitherto practised, has one very important point of weakness, and that is the obstruction which is offered to the printing light, not only by the *paper*, but by the *bichromate* which the paper has imbibed. The effect of this is to interpose a yellow screen between the negative and chromo-gelatine coating, and this yellow screen becomes brown, and consequently more and more obstructive to the light as the printing proceeds, and most so precisely where the light should pass most freely. The actinic force is thus, to a great extent, expended in the production of a chromotype picture within the body of the paper, instead of being transmitted so as to act effectively upon the gelatinized surface beyond. To carry out through-paper printing, so as to obtain from it the best possible results, two things—not hitherto done or proposed—are requisite; viz.:—
>
> 1st. The paper must be so prepared as not only to be transparent, but also *non-absorbent of the bichromate solution.*
>
> 2nd. *The material employed to make the paper transparent must be discharged after the printing is effected.*
>
> With a view to comply with these conditions, I have coated paper with collodion to resist the absorption of the bichromate, and rendered the paper transparent with paraffin, with a view to its being afterwards removed by means of benzole. Paper so prepared can be readily printed through so as to produce an image *in the gelatinous* coating, and which only requires to be developed in tepid water, and, after drying, to have the paraffin removed by benzole, in order to give a presentable result. Of course there is, and must inevitably be, *some* loss of definition, both by reason of the separation of the sensitive surface from the negative by the thickness of the paper, and also by the still not perfect transparency of the paper. But yet, with a certain class of subjects, through-paper printing—modified as I have indicated—is capable of useful application. The print will, of course, be inverted, unless the negative has been taken through the glass, or transferred.

Amongst the examples with which Mr. Blair has favoured us is one very interesting specimen on fine linen, produced by the method described in the chapter entitled, in Mr. Blair's book, a "New Tissue and a New Process." In this case the tissue is prepared on a textile fabric, and whilst the exposure is not through the back of the tissue, the development *is*, so that whilst the prepared surface is placed in contact with the negative, the soluble gelatine and colour are washed away from the back, the water and soluble matter passing through the open permeable fabric, producing a print with perfect gradation of half-tone. This reminds us of some prints produced by Mr. Swan some years ago in a manner very similar in principle and of which we have some examples in our possession. Porous paper, such as fine blotting-paper or plate paper, being coated with a solution of asphaltum, which it absorbed, was exposed with the prepared side in contact with the negative. It was then floated on turpentine with the prepared side uppermost. The portion of the asphaltum which, having been protected by the negative from the light, is still soluble, is dissolved by the turpentine, and percolates through the paper, leaving, finally, a bitumen picture in half-tone, which is thoroughly embedded in the texture of the paper. A brief notice of the process appeared in the article to which we have referred, and it may be interesting to reproduce the paragraph then published, not for the purpose of showing that the process just published is not new—for we are satisfied that, so far as Mr. Blair is concerned, it is original—but to show that, although it was published more than two years ago, it has not hitherto been popularized. The paragraph then published stands as follows:—

> Mr. Swan has shown us a curiosity in carbon printing—prints produced in the following novel manner:—Paper was saturated with a solution of asphalt, of such consistence that, when dry, no gloss appears on the paper. After exposure under a negative, an image was developed by means of turpentine, applied so that the soluble asphaltum shall find its way out of the paper from the side opposite to that exposed to light, so leaving the insoluble asphaltum to form a print with half-tone. The same principle is, of course, applicable with chromo-gelatine printing; the material saturated with the chromo-gelatine being of an open texture (woven materials, for an example), and the colouring matter being, of course, soluble with the gelatine.

On mentioning these modes of producing carbon prints with very fair half-tone without transfer, it is only right to express our conviction that the best of these are not equal to the best produced by means of transfer, and that in every case the amount of trouble in securing good results seems not less than that involved in transferring. As affording very interesting work for amateurs, or small professional practitioners, some, or all, of these methods possess value, none, perhaps, being more simple or efficient than the method suggested by Mr. Blair with turpentine; but, for commercial use, we must state that the Johnson method appears not only to yield much finer results, but, when systematically carried out, it is more simple, certain, and economical than the majority of ingenious modes of dispensing with the operation of transfer.

Foreign Miscellanea.

It is probable that the Albert process will be worked in Vienna by M. Ludwig Angerer, who has concluded an arrangement with M. Albert with this view. In fact, ever since March last, communications have been passing between these gentlemen, having reference to the elaboration and establishment of the process, and it is now finally settled that the invention will be practised either under the auspices of a limited company or under the sole direction of MM. Albert and Angerer. A movement was made by several Austrian photographers to purchase, for the sum of 50,000 florins, the right to practise the method in Austria alone, but it was found impossible to carry out the necessary arrangements.

The *Societe des Sciences Industrielles*, of Lyons, has offered to award two medals for the solution of the following problems:—1, For the discovery of a non-poisonous fixing agent, which shall possess the same energetic qualities as cyanide of potassium; 2, for the invention of a new lithographic printing process for photographs, better than any at present in existence. Communications in reference to these two matters must be sent in before the 31st July, 1869, to the Secretary of the Society, addressed to 6, Quai de Retz, Lyons.

A correspondent in the *Photographische Correspondenz* states that for some time past his prints have been injured by the formation of black stains, and have refused to tone down by treatment in the gold bath. Both these difficulties he overcame by coating his washing-trough—which consisted of oak, and induced a precipitate in the operations of washing—with a good varnish, and thus protecting it from the action of the water.

M. Herzog, in the *Archiv*, states that after a bath has been corrected by the addition of permanganate of potash, an appreciable amount of nitric acid may be added without injury.

According to recent accounts, only two Austrian photographers—MM. Angerer and Wendling—have sent pictures to the Paris Photographic Exhibition. The latter was opened to the public on the 1st May.

Owing to certain dissensions in the Berlin Photographic Society, fifty of its members have seceded and formed a separate body, under the designation of *Verein zur Forderung der Photographie.* Dr. Vogel has resigned the post of President, and Dr. Jacobsen that of Secretary, in the old Society, and both have been appointed to fill the same positions in the new one. In place of Dr. Vogel the Berlin Society have elected Dr. Holze as President, and M. Paul Bette as Secretary. The *Photographische Mittheilungen* will, at any rate for the present, remain the official organ of both Societies.

The commission appointed to consider M. Grahe's proposition relative to an equalization of the weights and dimensions of photographic necessaries have made their report. They have taken into consideration the interests of manufacturers, and believe the new sizes and quantities fixed upon will be both beneficial to the producer and consumer. Whole-plate and half-plate photographs are to cease as denominating terms, and in lieu thereof glass plates of special dimensions will be supplied. The most suitable dimensions for copying-frames and cardboard are also laid down, as likewise the rule that fluid chemicals should always be measured by the cubic centimetre.

The *Mittheilungen* publishes a very minute and clearly defined copy of a poem and three engravings, produced by means of heliography; they were prepared at the King's Printing Establishment, and are of wonderful sharpness. Around the new Prussian banknotes is printed, in very small type, a warning to the effect that anybody imitating the same will be sentenced to transportation; the very minute dimensions of the letter-press is, indeed one of the safeguards against forgery, and it is by means of photo-engraving that this portion of the document is prepared.

In the *Archiv*, Dr. Julius Stinde reviews the merits of the landscape pictures and dry-plate results exhibited at the recent photographic exhibition at Hamburg.

THE ALBERT PROCESS AND ITS PRACTICAL VALUE.—THE PBESERVATION OF THE NEGATIVE.—THE BERLIN PHOTOGRAPHIC SOCIETY

BY DR. HERMANN VOGEL.

You have already published the details of Albert's patent, and the process is therefore now known to be a modification or improvement of that of M. Tessie du Motay. It is probable that this gentleman may claim the honour of priority, but, in any case, it is certain that the worst prints of the Albert process are superior to the best impressions of Tessie du Motay. Photographs produced by the Tessie method have never been confounded with silver prints, but at the last exhibition Albert's proofs were mistaken for the latter.

The Albert pictures resemble very much impressions upon matt paper, and will be an efficient substitute for the same; thus we have, for the first time, a process possessing the truth and delicacy of photography, and, at the same time, the producing power of lithography. Similar qualifications are indeed enjoyed by the Woodburytype, but the latter is based upon a perfectly different principle: a gelatine pigment, difficult to preserve and to print with, is employed, and pictures of a small size only are produced. Albert, on the other hand, uses the most permanent fatty ink, and produces prints twenty inches in length. He is capable of furnishing as many as 1,300 impressions from one plate, and the cost of a proof measuring 14 by 20 amounts to but one shilling, while even in producing a dozen cartes-de-visite it is said that its application may be advantageously resorted to.

Possessed of such advantages, there is no doubt that in instances where large supplies of prints are necessary, and where the same are of large dimensions, the Albert process will supersede the ordinary photographic printing methods. For satisfying small demands, especially as regards photographic portraiture, where numbers of copies are not required, the matter is different. In cases where a dozen or two only of pictures are wanted, cheapness and durability would be the main points to be considered prior to its adoption.

As a matter of course, some little time must elapse before a process of this kind can be introduced into the studio of the ordinary photographer. Every new process, let it be ever so simple, requires to be learnt, and more or less time is necessary before becoming familiarised with it; for this reason many prefer to go on in the old course rather than pay money for the purpose of becoming acquainted with a novelty. Further, the more the new process differs from the old one, the more difficult is the introduction thereof. The carbon process is a good example of this. In order to simplify carbon printing as much as possible, Swan manufactured tissue which could be rendered sensitive in the same manner as albuminized paper. This was a great step in advance, but there remained the uncertainty of exposure, and this was overcome with my photometer. The employment of my instrument required, however, some little practice, and many, consequently, took alarm at the process, more especially as in the elaboration of the carbon pictures the operations of development and double transfer had to be conducted. These manipulations were, it is true, very simple, but beginners made absurd mistakes in their early essays.

Many who had successfully overcome the first operations came to grief over the subsequent ones, and thus the process succeeded only in the hands of those who threw the whole of their energy into the matter, and did not allow themselves to be frightened off by their early misfortunes; as, for instance, Borchardt, of Riga; Menke and Co., of Hamburg; Hundt, of Munster; Braun, of Dornach, and others.

Similar difficulties will no doubt arise in connection with the Albert invention. At present, we do not know the precise details of the process, excepting that M. Albert employs reversed negatives, and prints upon glass (the surface of which has been covered with a certain sensitive preparation), and produces a result which is not a finished picture, but a printing surface to be rolled up with fatty ink and printed from in the manner of a lithographic stone. It is this last step in the process which will, I fear, present difficulties to the photographer.

We see, therefore, that the Albert process also necessitates a series of operations which would be as foreign to the ordinary photographer as those of the carbon printing method. Whether a division of labour could be effected in the photographer's work, as happens to a certain extent in England, where the operator contents himself with the production of negatives, while the printing from them is carried on by special printing establishments, is a question which must be left for decision hereafter.

It is a very curious circumstance, that among the number of Albert prints I have had an opportunity of inspecting in Berlin, there have been but very few portraits, and these appeared inferior to pictures of other subjects. Last week, however, I received one portrait, by the Albert process, which was excellent, but only one. It is very difficult, therefore, to form a sound judgment of a process of which but a few good examples have been shown; a hundred or even several hundreds of copies from one plate should be seen before an estimate of the value of the invention is attempted.

M. Albert has promised to deliver 2,000 prints for distribution with the *Photographische Mittheilungen*, and when these have been delivered we shall know more about the process. There are many persons here trying their hand at it, following the details published in the patent, and it is generally asserted that the preparation of the plate is easy, but the printing therefrom is beset with much difficulty. For each print it is necessary to have different rollers and inks of various tints, and a specially prepared paper is also required for printing upon. As far as I can judge, therefore, I should say that the ordinary or carbon printing process will still remain the easiest and best for portraiture.

Allow me to add a few remarks upon the preservation and treatment of negatives. The perfect preservation of negatives, the engraved plates of the photographer, should always be the better ensured the more the same are required to be printed; and the solution of this problem is rendered the more difficult by reason of the very fragile nature of the material of which they are composed, and the delicate character of the filmy design, as compared with a lithographic stone or an engraving upon metal. If we also take into consideration the almost indispensable retouching of the negative, whereby a quantity of loose Indian ink, or oil colour, is applied to the glass, or varnished side of the negative, and, moreover, the fact that the printing is conducted with one of the most corrosive of chemicals, nitrate of silver, it really appears a matter of wonder how the negatives are made to last so long. That the nitrate of silver exerts an action upon the varnish is at once proved by applying the tongue to a negative from which a few dozen prints have been taken off, when the decided caustic taste will be at once apparent. The silver compound becomes, to a certain extent, absorbed by the negative film, and it is no wonder, therefore, that the latter assumes a coloured—generally a yellowish—tint by continued exposure to light; for this reason, also, it is that the last prints taken off have a harder appearance than the first proofs. This may be of advantage with soft or flat negatives, but decidedly the reverse when the plate is already somewhat hard.

Another enemy to negatives, and a more dangerous one still, is moisture. Some time since M. Stiehm communicated to the *Mittheilungen* the results of an experiment which demonstrated in a very conclusive manner the characteristic and injurious effect of damp. By placing a piece of moist blotting-paper upon a varnished negative, and allowing the two to remain in contact for twelve hours, splitting of the film was produced. This splitting or rising of the film takes place, unfortunately, but too frequently, and brings about the destruction of many valuable negatives. Pictures upon plate-glass are said to suffer more than others, and the statement has indeed been made that the injuries in question only arise upon glass of this description. Our experience teaches us, however, that negatives upon sheet glass are also liable to damage from the occurrence in question, although not to the extent as in the case with plate-glass pictures, and that this injury to the film is mainly due to moisture.

It happened at one time that, out of a series of negatives taken at the same time and with the same chemicals, a certain number which had been given out to be printed became injured from lifting of the film, while the rest, stored away in the cupboard, remained intact. From this I inferred that the negatives were printed in a damp room, and that the printer had carelessly placed imperfectly dried paper in contact with the films. Too much latitude is often allowed to the printer. In no operation is more strict surveillance necessary; he has the most valuable property of the photographer in his possession, and he frequently destroys the same irretrievably. We have noticed sometimes, at the commencement of a shower, that the printer has brought in his pressure-frames, and although the pads have become moistened by a few drops of rain, he has not deemed it worth his while to change the pieces of felt. The result of such a proceeding is very obvious: the negative may not sustain any injury on the spot, but after twenty or forty impressions have been taken off, the film commences to split.

These circumstances explain the unequal preservative qualities of the negatives in our possession. Many photographers preserve their negatives in plate-boxes. This method is only to be recommended when the boxes are perfectly dry, and made of good varnished wood. A better mode is to store them in airy cupboards in a dry room, the cupboard not being pushed close against the wall, but an air space being allowed in between. Imperfections in the roof allow of the trickling of rain-water into the apartment, and damp stains are thus caused on the walls, which, when covered by the cupboard, are not observed until the presence of moisture is perceived among the plates. Moisture admitted in this way invariably gives rise to the lifting and splitting of the film.

A circumstance which I observed in Aden, in reference to this subject, is worthy of notice. Negatives produced in a damp climate (such as Aden) possessed extraordinarily precarious films, while those obtained in the dry atmosphere of the Desert with the same chemicals were exceedingly solid. In the preparation of negatives, therefore, their permanence depends much upon the dampness of the atmosphere.

Many photographers recommend the varnishing of negatives with a solution of gum (in the proportion of 1 part of gum to 30 of water) for preventing injury to the film; plates so treated are, however, not free from impurity, although, in such cases, damage to the film is of more seldom occurrence.

The methods recommended for restoring the films thus injured are not always to be relied upon, the process of submitting the negatives to the action of alcohol and ether vapours (by covering a vessel containing the liquid with the injured plate) being not always attended with success. The injuries to the film appear to be of two different kinds, as, indeed, you have already mentioned in the NEWS, viz., the honeycomb cracks and the vermicular cracks. Under honeycomb cracking I think you mean the same that I designate "mole-track" cracks, for these latter are very much like the traces of a mole. The mole-track cracking is easily remedied by alcoholic vapour; and some of my Egyptian negatives, which were injured, were thus restored by covering a dish containing cold alcohol with the varnished side of the negatives. Flooding with warm alcohol is not a good remedy.

Among vermicular cracks there are some which disappear altogether by subjecting the negative to a warm temperature, but these, after a time, again become evident. Under these circumstances, a practical process for the multiplication of negatives would be invaluable to photographers, and, at the present time, the collodion paper of M. Ost, prepared in the Simpsontype manner, appears to offer the most promising results. In my next letter I hope to be able to give you the details of its preparation.

In Berlin we have now two photographic societies. For some months past there has been in the old society much discussion in respect to a modification of the rules, and as it was found impossible to arrive at a satisfactory arrangement, the body has become separated into two parts. One of the branches, called the *Verein zur Forderung der Photographie*, contains all the well-known names: Dr. Jocobsen, Dr. Zencker, MM. Grasshoff, Beyrich, Milster, Loescher, Petsch, Schering, &c.

◆

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

CHAPTER 2.—SALOMON PRINTS.*

In considering the means by which a Salomon print can be produced, it is scarce necessary that I observe, a good negative is an imperative necessity. M. Salomon employs what is best described as a strong negative, ranging from sparingly applied opacity to nearly (if not quite) perfect transparency in those parts which represent the deeper shadows. To those who have not enjoyed the privilege of inspecting narrowly the pictures produced by M. Salomon, I would just remark that the composition is arranged and the folds of the drapery are manipulated in such a way as to bring each prominency face to face, as it were, with the light. The plan is an admirable one, as the luminous rays which fall on the projections are repeated on the darker side by reflection; hence arises the marvellous detail perceptible in the darkest shadows presented by the velvet drapery usually employed by the French artist.

Although M. Salomon produces and prints from negatives such as I have endeavoured to describe, it by no means follows that negatives of a weaker character are incapable of yielding similar results; one condition is, however, in all cases imperative, viz., the fullest amount of detail must be present in the negative, otherwise perfection must not be expected in the print. Vigour does not necessarily imply hardness; neither does softness mean a thing weak. I shall illustrate this remark by offering examples in due course. At present I quit the subject of negatives, to direct attention to albuminized paper, and the treatment requisite to produce an imitation of the Salomon style of print.

When the supposition was first mooted that M. Salomon employed a special kind of paper, I disputed the point, and at once avowed myself a sceptic to the idea. To set the matter at rest, I embraced the earliest opportunity which offered itself to prosecute enquiry. My partner in business, who had been introduced several months before to M. Salomon by a mutual friend, had occasion to visit Paris; I therefore took advantage of the circumstance, and requested him to visit, and, if possible, to prevail on the French artist to try a piece of our albumen paper in juxtaposition with paper such as he usually employed. The request was no sooner tendered than it was freely and courteously granted, and, in due course, the results of the experiment were forwarded to me by post. On examination, I candidly confess that I perceived not merely a marked but a decided and widely distinct difference in the appearance of the two papers, for whilst the portion printed on our paper was comparatively weak, M. Salomon's half of the print was full of vigour, the face and hands exhibiting the characteristic rosy and flesh-like tints which have been so faithfully described by the leading photographic journals. One thing, however, I noticed, viz., that whilst the paper as used by M. Salomon proves so perfect for large pictures, it would not suit smaller pictures, as it yields results too vigorous for delicate work. At first I felt quite at a loss to account for the difference in the results I have described, as I felt confident that simple albumen and chlorides are incapable of giving results I am unacquainted with; but on a closer examination of the print on our portion of paper, I noticed indications which I think provide a key to the mystery. Whatever might have been advanced by myself or others to the contrary, M. Salomon keeps his mode of printing a profound secret, and I am borne out in this opinion by my partner, whose knowledge of French character is far greater than my own. But if secrets cannot be penetrated by means of ordinary enquiries, they can, at all events, be guessed at, and, if the guessable matter yields similar results when put into practice, it is all we need, even though we have not hit upon the exact truth.

Now, with reference to this secret of M. Salomon's, I am convinced that the silver bath is the main point of departure from the usually-adopted course, and the albumen coating of the paper is modified to harmonize with the conditions presented by the sensitizing solution. My readers will doubtless remember that to the YEAR-BOOK of 1866 I contributed a paper on the employment of gelatine as an adjunct to the printing bath. My subsequent experience and experiments with that and other mucilaginous substances were very considerable, and the results achieved possessed characteristics perfectly analogous with those produced by M. Salomon on his own paper. The query here suggested demands a reason: if the two kinds of paper employed in the test experiment of M. Salomon were treated alike as regards the sensitizing, why should the results differ? I reply, because the paper I provided was a very highly albuminized sample, and, as such, was most unsuitable for use with a gelatinous bath; a coarser and lesser glazed surface would answer best, because the pores of the paper would admit of the thickened silver solution biting and clinging to them with a tenacity that prevents subsequent separation.

In offering these explanatory remarks, I would wish it to be distinctly understood that I do not pretend to state as a certainty that M. Salomon uses a gelatine and silver sensitizing solution. All I can with certainty determine is the experienced fact that gelatine, isinglass, and a variety of other mucilaginous substances are capable, when employed as adjuncts to the silver printing-bath, of producing those peculiarities which make the Salomon prints exceptional in their rich qualities, and either might be used as dodge the first by those who desire to produce a Salomonesque print. With judicious treatment the gelatine bath is capable of imparting to the paper the power of yielding great depth of shadow, warmth and richness of tone, together with those rosy whites which have been so deservedly admired. Unfortunately, the organic sensitizers possess a serious defect: they are unstable in their constitution, and, in addition to their liability to rapid discolouration, they are equally liable to undergo spontaneous decomposition, which converts the gelatine into a substance best described as being similar to chopped up liver.

Although I have dwelt at some length on the probable means employed by M. Salomon in the production of his prints, it by no means follows that I am an admirer of the methods I have alluded to; the facts lie in the contrary direction, and the remembrance of troubles I have been subjected to by mucilaginous substances bid me once more exclaim, Beware how you use gelatine, and, if more simple means can be found, by all means adopt them preferentially. Organic acids—such as citric, tartaric, &c.—added to the silver bath yield very warm prints, but toning is a difficult matter if any depth is needed; not only so, but their addition gradually decomposes the bath—at least, so I have found it. In the absence, therefore, of evidence that easier modes have been discovered, I purpose devoting the remainder of this chapter to a description of the operations I conducted to an eminent success, *not* with paper exceptionally prepared, or of chemicals *specially* constructed, but articles, from beginning to ending, the same as I employ in my daily practice; the same as I described in the series of articles which, in my name, were published in the News of last year. I scarce need add that a method which admits of means at hand being made available is preferable to keeping special articles for special uses.

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* Continued from p. 291.

(*To be continued.*)

PORTRAITS WITH A PURE DEAD WHITE SURFACE UPON TALC OR GLASS.

BY CHAS. DURAND.

Put into a small mortar a teaspoonful of kaolin, add thereto about a quarter of an ounce of sensitive collodio-chloride, and well stir with the pestle until it becomes a smooth paste. Add to this three-fourths of an ounce more of the collodion, and again stir, and pour the whole into a bottle with one or two drops of castor oil. Well shake, and place it aside until the coarse particles have subsided.

Edge a piece of talc or glass for about a quarter of an inch all round with dilute albumen, afterwards coat with the kaolin collodion, and dry by gentle heat, when the talc or glass, if placed upon a piece of white paper, will have the appearance of alabaster.

If the film splits, it should have a trifle more castor oil in the collodion; but the best remedy is to choose a more powdery collodion.

If the film is upon glass, the progress of printing may be examined from the back; but if talc be the medium used, it may be turned back in the same manner as when printing upon paper.

Tone, fix, and wash in the same manner as with an ordinary collodio chloride print upon opal glass, and mount in a frame or case, to protect the picture from being scratched. It must not be varnished.

After three years' trial the film has been found not to crack or leave the talc or glass after the picture has been once finished!

Many pretty effects may be produced by putting different coloured papers behind vignettes produced in this way, as whatever colour is placed behind the picture gives a delicate tinge of that colour to the picture.

Talc may be obtained in sheets as large as ten by eight inches.

PERSPECTIVE AND PHOTOGRAPHY.

BY AN AMATEUR.*

The next question to be considered is the proper angle to include in a picture. Hayter says, in one place, that the greatest angle allowable is when the distance of the eye from the picture is the same as the width of the picture, in which case the angle included would be 53°, that being, in his opinion, the greatest angle which the eyes can conveniently include at one time. In another passage of the same book he puts the widest angle it is advisable to use at 50°.

M. Capagne, in his "Traité Pratique de Perspective, 1866," says:—"*The objects intended to form the picture* ought to be easily embraced at a glance; in fact, the artist ought not to be obliged to turn his head to the right or the left to enable him to see those on the outside thoroughly well, and such would inevitably be the case if the spectator approached too near to the subject to be represented. The distance that the draughtsman should adopt, so as to embrace his subject easily with a single glance, should be, at least, equal to *twice the total base of the subject.* This distance will include the whole of the subject under an angle of about 28°, which leave the visual rays all their force and all their purity." Anyone who takes the trouble to make the experiment will find that this estimate is correct. It follows, that if we wish to see a picture comfortably and well, including the whole at one glance, it ought not to be nearer to our eyes than twice its width, certainly never on any occasion nearer than its width. In the former case it will subtend an angle of 28°, and in the latter of 53° at the eye, and it will generally be between these limits that a picture will be looked at. Now we have already observed that, in order to see a picture properly, we must place it so that it may subtend the same angle to our eye as the original subject subtended to that of the painter or to the lens of the photographer; it follows, therefore, that a photograph which is intended to give a correct impression of the original subject should not, in any case, include an angle of more than 53°, and that an angle of 30° is far better.

To sum up our conclusions: When we wish to obtain a perfectly truthful photograph, under the best possible conditions, our lens should not have a shorter focal length than eight inches for single or six inches for stereoscopic pictures, nor should it include a wider angle than 30°. But when I look in an optician's catalogue I find no single lens which includes only 30°; and when I enquire for a "narrow-angle landscape lens," I am told that it does not exist, and am recommended to buy a longer focus wide-angle lens than is required to cover my plate. To that course there are two very strong objections: In the first place, the price of such a lens is very much higher than that of a lens made to cover my plate; and, in the second place, the lens is too large and heavy to be used with a camera suitable for a smaller lens. I am also told by the optician that "a wide-angle implies a small diaphragm and a long exposure;" if, therefore, I wish for a lens which will give a true representation of a landscape, I must not only pay two or three times as much as I need pay if "narrow-angle" lenses were made, but I must also use a clumsy instrument, and perhaps expose for an unnecessarily long time. I venture to commend these remarks to the attention of our leading opticians.

Let it not be supposed, however, that I seek to condemn altogether the use of wide-angle lenses. When, as an amateur, I photograph a view, my intention usually is, not so much to obtain a perfectly accurate as a pleasing picture, and to do so I must introduce such objects as are necessary for the purpose. But, perhaps, having decided to have certain rocks on one side of the picture and a group of trees on the other, and having retired to the distance necessary to include them in an angle of 30°, I find trees intercepting my view, or the ground may be too high or too low in that place. A painter can sketch his picture as he would see it from any spot he may choose, and may omit from his picture what is objectionable; but a photographer has not that resource, and he must content himself with choosing the best spot he can, and using a lens which will include a sufficient angle, remembering that the more nearly that angle approximates to 28° the more truthful will be the picture.

At page 550 of last year's volume, Mr. James Martin makes two remarks, to one of which I have already referred as showing that his experiments were not made with a rectilinear lens; the other is worthy of some consideration. He says:—"Make the front elevation of a portico supported by pillars the subject, and in this case the pillars nearest the sides will appear larger than those in the centre, proving that with such lenses" (meaning the wide-angle) "perspective truth is out of the question." If the lens he used had the barrel distortion, part of the increased diameter of the pillars on the sides of the picture would be due to that distortion; but even if he had used a rectilinear lens, the same effect would, to some extent, have been produced, and this, it is easy to show, is only another instance of the really true but apparently false perspective of such a lens. If, instead of photographing, he had drawn the portico correctly upon glass, including the same wide angle, he would have found precisely the same effect produced: the pillars would have been represented gradually wider, beginning from that which was opposite to him to the outside one. The diagram fig. 5 will show that this arises from the fact that the column AB is looked at sideways, which makes it subtend a much greater angle than its diameter at EF would subtend, while the angle CSD is but little less than CSH. Writers on perspective have not failed to observe this fact, and have given it as a reason why a very wide angle should not be embraced in a picture; but I believe it is usual for painters to draw the perspective somewhat falsely, and make all the columns of the same width, because, otherwise, the perspective would appear very incorrect if the picture were not looked at from exactly the painter's point of view. Our lenses, of course, will not adopt this device, and the only resource of the photographer in such cases is to include so small an angle, and place himself at such a distance from the subject, that the difference in the size of the columns shall not be obvious. It will, however, exist through the angle included by the lens be very small. For a similar reason, those columns in a church which are nearest to an eye looking up the aisle will appear and will be photographed of wider diameter in proportion to their distance than those which are more remote, because the latter will fall nearer to the line of vision of the spectator, and more nearly in the centre of the photograph. I think this reasoning will apply to all solid objects, wherever they may be situated in a picture: the further they are from the centre, the wider they will be represented in proportion to their distance from the lens; and this is no fault in the perspective, being just what the eye is accustomed to, as long as we do not exceed the angle which it can comfortably include.

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* Continued from p. 297.

Another reason for the perspective of photographs appearing false may be the following. It has been objected to pre-Raphaelite painting, that in Nature we cannot see the details of near and of distant objects with distinctness at the same moment, whereas those objects being painted on the same plane in a picture are all in focus to the eye at the same time. Whatever truth there may be in this remark, it will apply with increased force to those photographs which include very near objects.

Anyone who, for the first time, endeavours to draw accurately a view containing distant mountains, will be surprised to see how small they appear in the picture. The mind, knowing their great distance, and how large they really are, and, perhaps, regarding them as the most important feature of the landscape, unconsciously exaggerates their apparent size; and, in order that they may look as large on the canvas as they do to the imagination, the painter often exaggerates them in the picture. The photographer may do the same by using a lens whose angle is less than 28°.

II. I have now explained all the causes that have occurred to me of the apparently false perspective of some photographs produced by a stationary rectilinear lens upon a flat vertical screen. Some years ago a lens was invented which included a very wide angle, but, as it had very little depth of focus, it was found necessary to use glasses for the negative which were not flat, but a portion of a cylinder. It was impossible that correct images should be obtained in this way. In fig. 6, let AB be a right line divided into four equal parts in C, E, and D, and let an image of it be produced by a rectilinear lens, L, on a flat focussing-screen, *ba*. It will be found that *ba* is also divided into four equal parts in *d*, *f*, *c*. But if, for the flat focussing-screen, we substitute a curved one, *gfh*, the line will no longer be equally divided, but those divisions of the line which are nearer the lens than *ba*, *gd*, and *ch*, will be smaller than *bd* and *ca*; and those which are further off, as *df* and *fc*, will be larger than *dc* and *ec*. It is not necessary to say more about this lens, for I imagine that it has quite gone out of use. I wish the same could be said of that very ingenious instrument of distortion, the revolving pantascopic camera.

III. If a painter were to place himself in the centre of a glass cylinder, and trace upon it the landscape as he saw it, the glass, when flattened out, would represent the negatives produced by this camera; and if the prints taken from those negatives were intended to be formed into cylinders and looked at from the middle, like the old panoramas that were once in the Colosseum, Regent's Park, nothing could be better adapted to produce suitable negatives than the revolving camera. But if the prints are to be mounted flat, and looked at as ordinary photographs are seen, I suppose that nothing could more effectually distort the perspective.

(*To be continued.*)

Recent Patents.

IMPROVEMENTS IN CARBON PRINTING.

BY JOHN POUNCY.

This specification includes two distinct processes: first, a method of applying colour to carbon prints before transferring; and, second, a method of making the support of a carbon tissue temporarily transparent, and, after producing a picture by printing through it, restoring its opacity:—

The first object of my invention is to produce a picture on the reverse or obverse side, before transferring the same to canvas or to the surface of any other material where it is to permanently remain.

The second object of my said invention is to produce a picture in any transparent substance, or in a substance rendered transparent for the purpose of producing such picture, such substance to be afterwards restored to its original character as to opacity, which can be effected by treating such substances as paper in a solution as hereafter described, and afterwards washing out the solution, as also hereafter described, whereby a picture can be produced capable of permanent existence as an incorporation with the texture of the material in which the picture is so produced as aforesaid.

Further, when and where desirable, the picture produced may, however, be transferred to any other material, whether transparent or opaque, both before and after development. That is to say, as to the first object of my invention, I produce a photographic or other picture by any available means, in any colouring matter, being carbon or pigments, or other material, mixed and prepared in oil, spirit, or water, or in any similar solution, and made sensitive according to any of the known methods (as well as those described in the Provisional Specification of my application for Letters Patent No. 780, A.D. 1858, and the Specification of my Patent No. 267, A.D. 1863). The colours required are laid on over the surface of the several parts of the photographic or other picture, on the reverse or obverse side, before transferring the same to canvas, or to the surface of any other material, thus saving much time and labour in colouring and preserving the whole of the detail of the photographic or other picture, which has hitherto been partially obliterated by the application of colours in the manner heretofore adopted.

As to the second object of my said invention, monochrome pictures not required to be transferred are to be printed on a transparent material—paper, glass, silk, or other surface—and if intended to be finished on the same material, the medium of making the said material transparent is to be applied after the colouring matter, and removed by means in accordance with the nature of that material, and so that the picture may finally appear on the said material in its original purity. Hence the picture is in the fibre of and becomes part of the paper or fabric on which it is produced, which hitherto has not been accomplished.

Pictures may, when required, be obtained on transparent or opaque material directly on to the transparent or opaque surface, or transferred to the same, and there left impressed on the same, or be transferred, if required. Thus, by means of my invention, I produce photographs in carbon or pigments, either in oil, spirit, or water, or similar solution, preserving and restoring the original condition of the material on which such pictures are produced; and I colour photographs or other pictures so produced in oil, spirit, or water-colour pigments before or after transferring the same.

In order that my invention may be fully understood, I will now state the details of the method of procedure I prefer to adopt, although I do not limit myself exactly to such details.

The course I adopt is to first apply the required monochrome colour all over the surface of the material on which the picture is to be produced, and the negative is then to be applied to the prepared or non-prepared surface, when the light hardens the colouring matter, the parts not acted upon by light remaining soluble, and are to be dissolved off, either by spirit or water, or both, according to the nature of the preparation of the paper or surface on which the picture is produced.

The solution to be adopted for giving transparency to the paper or other material used consists of oil or matter, such as oils, wax and glycerine, turpentine, naphtha, paraffine, and benzole, or anything of like nature; it not being necessary always to use all these ingredients.

The means for restoring the opacity of the paper, and fully developing the picture, is by boiled water, and by finally finishing it by immersing the same in turpentine, naphtha, or benzole, or any other solvent for greasy or oleaginous matters.

Having now particularly ascertained and described the nature of my said invention, I hereby declare that I claim the "Improvements in the Production of Plain or Coloured Photographic or other Pictures," consisting in the methods of production described, and the preparation and application of the various materials required for such production of such the above-mentioned oil colour or water colour pigment pictures.

PRODUCING RAISED PRINTING SURFACES.

BY DANIEL FRUWIRTH AND ABDIEL HAWKINS.

This specification describes the improvements in photo-block-printing which have become known to our readers by several excellent examples printed in our pages, and described as by Fruwirth's phototype process. It is described as follows:—

Our invention of "An Improved Process for Producing Raised Printing Surfaces" has for its object the production of metallic surfaces in relief, suitable for surface printing in an ordinary letter-press printing press, by the combined use of photography with a process somewhat resembling in its main features the known glyphographic process, for the production from engraved plates of other plates or blocks with the design in relief, so as to be suitable for printing in typographic presses. Various attempts have been made to produce printing surfaces from plates on which a photographic picture has been obtained in any of the known ways, and this has been effected by first removing from the sensitive surface on which the photographic image has been produced such parts as have been unaffected by the rays of light, and then taking a cast or electrotype mould therefrom. Such processes, however, have not been found to be of any practical use, as it is impracticable to obtain sufficient relief, and the high lights are consequently very imperfect.

In carrying out our invention we first produce by any of the known photographic processes a negative on glass or paper (or any transparent substance) of the print, or drawing, or object it is intended to produce in relief as a printing surface. The success of the printing process depends mainly upon the negatives, and every means must be taken to render them as intense and black as possible. The negative must be capable of giving positive impressions by transmitting chemical rays of light in the well-known manner. With this negative a reversed image is produced on a copper or any other metal plate, glass, or ebonite, paper, or flexible substance, according to the work it is required to produce. To render the surface sensitive and suitable to receive the photographic image a paste is made, composed of bichromate of potash and a salt of soda or ammonia pulverized and mixed with a solution of gum or any suitable glutinous or organic substance which is not soluble in alcoholic mixtures. This paste is composed of the ingredients above-mentioned, mixed in about the following proportions; viz., 1 ounce of bichromate of potash, half an ounce of hyposulphite of soda, and half an ounce of hydrochlorate of ammonia, commonly called sal ammoniac. These ingredients are to be pulverized and dissolved by means of gentle heat in a mucilage composed of 1 ounce of albumen, 2½ ounces of gelatine, and 2½ ounces of Nuremberger glue, or best French transparent glue dissolved in from 2 to 3 pints of water. This paste is spread evenly over the metal or glass plate, and artificially or spontaneously dried. The plate thus prepared is then to be brought in contact with the aforesaid negative or transparent medium in an ordinary photographic printing frame, and exposed to light for a short time until the photographic image has been produced. When removed from the printing frame the prepared surface is to be covered with a mixed solution of alcohol or methylated spirit with acetic acid, which, when applied to the bichromate surface, all the unaltered bichromate will be dissolved out, leaving behind a faint reversed impression, which is capable of being transformed into a surface in relief. This surface in relief is obtained by means of a process somewhat resembling in the main features the well-known glyphographic process, and will be hereafter explained.

For some kinds of work we employ a paste composed principally of equal parts of dissolved gelatine and gum or other glutinous substance mixed with one-eighth part of bichromate, thus forming a paste which may be spread upon ebonite, glass, or any other material. The proportions we prefer are as follows: 2½ ounces of each of the solutions of gum, gelatine, and Nuremberger glue, 1 ounce of solution of bichromate of potash, and half an ounce of oxalic acid. The mixture may be thinned down to any desired extent, according to the season of the year and the temperature. This paste must be dried on the plate as in the former instance, and, after exposure to the action of light under a negative or positive taken for the purpose, the plate is put into a dish with cold water, which will dissolve out the unaffected bichromate, after which the surface must be dried. This will produce a surface from which a cast may be made; but in some cases the high lights should be built up with wax or varnish to a certain extent, care being taken not to cover any part of the picture. The plate must then be put into water and allowed to swell, after which it may be taken out and carefully dried with blotting-paper; the surface is then to be brushed over with a solution of ox-gall, and coated with a substance or composition consisting of 1 part of sulphur to 4 parts of refined tar melted with a gentle heat, during which a small quantity of india-rubber or gutta-percha solution may be added. Or a cast may be taken in plaster of Paris, as in making stereotype plates. From the plastic or other mould thus obtained a stereotype cast in intaglio in metal may be taken, and if any defects in the plate are found they may be repaired by hand.

In order to obtain a surface for printing by a letter-press machine we first of all build up the fine work, by passing over the surface a roller covered with copal or other varnish, and this operation is repeated until a sufficient thickness or depth is obtained. The high lights may be still further built up by the application of varnish with a brush. When the intaglio is completed we prepare it to receive a coating of copper by the electrotype process, and on the back of the film or sheet of copper thus produced is to be placed a sufficient thickness of type-metal to give strength to the copper, which, when mounted on a wooden block, will be ready for printing in an ordinary printing press.

Having now described our invention of "An Improved Process for Producing Raised Printing Surfaces," and having explained the manner of carrying the same into effect, we claim as the invention secured to us by Letters Patent, producing surfaces in relief (suitable for printing in ordinary typographical printing presses) by the combination of any suitable photographic process with the glyphographic process, as herein set forth.

MANUFACTURE OF PLATES FOR HELIOGRAPHIC ENGRAVING.

BY OCTAVE VICTOR FOURNIER.

The special aim in this improvement is to secure a photo-engraved plate with a grain or texture capable of holding ink:—

One of the principal drawbacks in heliographic engraving is the difficulty in obtaining plates possessing a grain or hatching capable of retaining the printing ink, and thus impeding the striking off of proofs. The object of the present invention is to remedy this defect, and consists in—

1st. Taking a photographic proof on glass of the hatching desired to be produced, and which has been previously printed or traced on a surface of any kind, and by any known means. This hatching may be square, lozenge, dotted, or otherwise according to the nature of the engraving required.

2nd. By obtaining by transparency a photographic proof positive on glass of the subject or object that is to be produced.

And, 3rd. By placing these two proofs one on the other so as to touch, and taking from them by transparency a second negative proof, which latter, when regarded transparently, has the effect of the reproduction of an engraving—that is to say, that this second proof is marked with a grain or hatching that it does not naturally possess. This proof is then employed in obtaining a heliographic plate by the ordinary and well-known means. A similar but less satisfactory result may be obtained by taking, in two different positions, the image of the grain or hatching and the object itself on the same plate, and *vice versa*.

The invention therefore consists in first procuring a photographic proof of the grain or hatching desired; secondly, in obtaining either a proof positive on glass of a photographic plate or of the object to be reproduced; and thirdly, in taking a negative proof on glass of the two preceding plates, placed one over the other, from which, as already mentioned, the heliographic plates are produced by the ordinary means.

Having thus described my invention, what I claim and desire to secure by Letters Patent is, the mode of manufacturing plates for heliographic engraving in the manner hereinbefore mentioned.

IMPROVED PROCESS FOR OBTAINING HELIOGRAPHIC PLATES.

BY H. DE FONT REAULX AND AMEDEE BARRET.

The object of this invention is similar to the preceding, the aim being to obtain a suitable grain in photo-engraved plates. It received provisional protection only.

One of the greatest difficulties of heliographic engraving has been to obtain flat surfaces having the grain or rough or hatched ground necessary for printing. To attain this object various experiments have been obtained, but none of them have given satisfactory results.

According to this invention the desired result is obtained in the following manner:—Firstly, a positive or negative of the object desired to be reproduced (whether a picture, landscape, portrait, or other subject) is to be obtained in any known manner. The next process is to place behind this positive or negative a sheet of glass, either ground, lined, or otherwise marked with any design, or wire gauze, woven fabric, or other substance capable of giving by transmitted light the appearance of hatching or grains, square or round stippling, or other desired effect, and then take a photographic proof therefrom by transmitted light; or the photograph of the grain or hatching may be taken first, and then placed behind the photographic plate to be reproduced. The quality or texture of the grains or hatchings, whether fine or coarse, may be varied by altering or changing the model by means of which they are obtained.

When the photographic proof of the subject with the hatched or stippled effect has been obtained as above described, a very thin coating of bichromatized gelatine is to be poured carefully over the surface, to impregnate the collodion therewith; then a second coating of the same, much thicker, the thickness of the latter varying according to the amount of relief desired to be obtained. After desiccation it is exposed to light and then immersed in water. The image or picture is represented by reliefs and depressions. The gelatine is then to be removed and transferred to another flat surface. For this purpose the gelatinized plate is to be immersed for several hours in a bath of tepid water to which a small quantity of glycerine or sugar has been added. The gelatinous surface is then to be rendered conducting by metallizing it by any known means in order to obtain therefrom by the galvano-plastic process a plate capable of yielding a great number of impressions equal in appearance to those produced by actual engraving.

THE SPIRIT PHOTOGRAPH TRIAL.

We have not considered it important to do more than briefly indicate the course and character of the trial of Mumler, the *soi-disant* photographer of ghosts in New York. We find, however, in our contemporary, the *Builder*, such an admirable *resume* of the whole narrative, in a tone so judicious and appreciative, that we reproduce it, slightly condensed, for the benefit of our readers, who will find in it the summing up of an impartial but shrewd and capable observer:—

There is at least one New York photographer who "calls spirits from the vasty deep" for the modest consideration of ten dollars a head. And they come, too, or something comes, very like the popular idea of a ghost. This clever artist takes the portrait of any person who may be desirous to sit, and also gives on the same carte-de-visite the shadowy picture of some deceased friend—husband or wife, parent, lover, or child. Thousands of persons believe, or profess to believe, that these likenesses are obtained by some spiritual force, and their credulity has enabled the "original spiritual photographer" to amass a handsome fortune. On the other hand, it happens that there are a large number of persons who have had spirit photographs taken, but are decidedly not satisfied with the result. They not only consider that in paying the sum of £2 for their effigy in the new style they have paid "too much for their whistle," but they look upon the thing as a regular swindle, and legal proceedings were taken against the person in question, a Mr. William H. Mumler. The charge against him was that, by means of what he calls spiritual photographs, he had cheated many credulous persons, leading them to believe it possible to photograph the immaterial forms of their departed friends. Mumler was charged, in fact, with obtaining money under false pretences. The case, being without precedent in the annals of criminal jurisprudence, has excited extraordinary interest in New York. The trial lasted about ten days, and much of the evidence was of a most remarkable character. Mumler, it would appear, was originally a jeweller's assistant, and took to photography about seven years ago in Boston. His pictures brought him at once into notoriety, though it is only now that proceedings have been taken against him, at the instance of the Mayor of New York. The particular charge on which the spirit photographer was more immediately arrested was this. One of the officials of the corporation was ordered to investigate the business, which he did by assuming a false name, and by getting his photograph taken by Mumler. When the sitting was over, the negative was shown to the visitor. A dim, indistinct outline of a ghostly face stared out of one corner of the plate. He was told that represented the spirit of his father-in-law. He, however, failed to recognize the worthy old gentleman, and emphatically declared that the picture represented neither his father-in-law nor any of his relations, nor yet any person whom he had ever seen or known. Among the witnesses examined for the prosecution were several practical photographers, who stated that pictures similar to those produced by Mumler might be obtained through other agencies than disembodied spirits. The counsel for the defence also brought forward a large number of witnesses, all of whom testified to the genuineness of the spiritual photographs taken for them by Mumler. They swore that they recognized the forms of departed friends—some of whom had been a long time dead—on the same card with their own likenesses. One gentleman even declared that not only himself but his friends distinctly recognized the features of his deceased wife in a photograph taken for him in this way. We find a judge bearing testimony still more astounding Judge Edmonds, who is known to be one of the most prominent advocates of spiritualism in the States, had two photographs taken by Mumler. The spirit form in the one he thought he could recognize, he said, though not the one in the other. This judge declared his belief that the camera can take a photograph of a spirit. "And I believe, also," he went on to say, "that spirits have materiality; not that gross materiality that mortals possess, but still they are material enough to be visible to the human eye." For Judge Edmonds has seen them. "Only a few days since I was in a court at Brooklyn, when a suit against a life assurance company for the amount claimed to be due on a certain policy was being heard. Looking towards that part of the court-room occupied by the jury, I saw the spirit of a man whose death was the basis of the suit. The spirit told me the circumstances connected with the death, said that the suit was groundless, that the claimant was not entitled to recover from the company, and further, that he, the man whose spirit was speaking, had committed suicide under certain circumstances. I drew a diagram of the place at which his death occurred, and, on showing it to the counsel, was told that it was exact in every particular." Parenthetically, we may observe, that for our part we should prefer a judge without the very remarkable and peculiar power possessed by Judge Edmonds. The facts and arguments of corporeal beings are, as a rule, more conclusive evidence in a court of justice, we should say, than the manifestations of spirits so-called. Well, the real point at issue is whether spirits can have their photographs taken or not. Another witness examined in the case was Mr. P. T. Barnum, the notorious showman and prince of humbugs, who had bought a number of Mumler's portraits and hung them up on the walls of his museum as examples of humbug. Being anxious, he said, to find out how the thing was done, Barnum called on another photographer, and asked him if he could take a spirit photograph, telling him he did not want any humbug about it. The artist said he could do it. The showman was permitted to examine the glass, witnessed the process of pouring over the liquids, and then saw the glass placed in the camera. He could discover nothing unusual; but when the plate was produced it had Barnum's likeness and the shadow of Abraham Lincoln. "I saw the ghost of Lincoln as soon as it was developed in the dark room. I was unconscious of any spiritual presence." Still this 'cute witness was as much in the dark as ever as to the *modus operandi*. But, at a subsequent hearing of the case, the material side of the question was presented. The counsel for the prosecution succeeded in showing "how ghosts are made." Mr. Bogardus, a practical photographer, said there were many ways of producing these so-called spirit photographs. He could produce the picture of an angel hovering over a man's head, or put a pair of horns on his head, without his knowing that anything unusual had been done. Of course it was a trick, and an acute photographer might find it out, but the witness had deceived some good ones. He could take an impression on a sensitive plate, put the plate aside, either in the bath or elsewhere, and afterwards bring it out and take a second picture on it. When the plate is developed, both pictures will be developed together. This method, however, sometimes does not call up the desired spirits. . . . .

The evidence was conclusive. But, besides, it was proved that the ghosts in some of Mumler's pictures, which were exhibited, could not have been in front of the camera at the same time with the sitter, because the lights and shadows of the one were opposed to those of the other. In front of the camera! Of course not; who ever heard of a ghost paying a visit except in the dark? With reference to the alleged likeness of the spirits to deceased friends, it was proved beyond a doubt that persons had been deceived by their imaginations, the same spirit having appeared on different plates, and been recognised as that of different departed ones! The dimness of the portraits aided the deception, and occasionally an extraordinary likeness to some deceased person happened to exist, or to be imagined. Then this Mumler, from his long experience in the business, had become extremely expert and successful at it. We have seen several portraits taken by him. They were of the ordinary carte-de-visite size, and there was, in addition to the likeness of the sitter, the shadowy outline of a male or female head, more or less indistinct, or a half-length figure of a female done in the regular white-sheeted apparition style. The pictures were clever enough, and might readily deceive the credulous and unsuspecting,—as, indeed, they have done; but now that the trick has been detected, and the swindle publicly exposed, notwithstanding that no verdict against him was obtained, Mr. Mumler is not very likely to dispose of any more spirits at ten dollars per head. That he has managed to carry on so successful a trade in the disembodied for so long only shows that the gullibility of mankind is very great.

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HOW WE SEE.

BY PROFESSOR MORTON.

We have been favoured by Professor Henry Morton, a distinguished American amateur photographer, with an abstract (which appeared in the *Philadelphia Inquirer*) of a very interesting lecture on human vision, which, as containing a large amount of information interesting to photographers, we have pleasure in reproducing for our readers:—

The art of vision is accomplished by means of a special organ or pair of organs—the eyes—which are partly physical, or, as we may say, instrumental, in their action, officiating exactly as certain lifeless and inorganic structures, such as we artificially construct, would officiate in collecting and distributing the light rays; and partly physiological in their structure, calling into play those conditions of life about which we know but little, and which can in no wise artificially reproduce, or by any amount of skill ourselves construct.

Regarded as an optical instrument, the eye consists of a spherical envelope called the "sclerotic coat," having set in its front a transparent dish-shaped window pane called the "cornea," and pierced behind to allow passage for the "optic nerve."

Behind the "cornea" is a variously coloured diaphragm or partition called the "iris," having in its middle a circular adjustable orifice called the "pupil," behind which, in turn, we find a curiously constructed bi-converse lens, called the "crystalline lens," and, finally, lining the interior walls of the remaining cavity, the "choroide coat," supporting a closely woven network of interlacing nerve roots, the retina all vanishing from the optic nerve before mentioned. The space between the cornea and the crystalline lens is filled with a liquid called the "aqueous humour," and the large cavity behind the crystalline lens with a gelatinous material called the "vitreous humour." (A diagram was here projected upon the screen, by which all these parts were exhibited in their proper positions.)

It will be evident that we have here, in the first place, a lens capable, like our ordinary lenses, of forming an image upon the inner wall of the eye, cavity, or retina.

We will, then, inquire, in the first place, how a simple lens brings about such a result as the formation of an image.

The diagram now upon the screen shows this, almost without need of further explanation. The rays from the summit of the object—which, without the lens, would be scattered over all parts of the screen—are each differently bent by the different parts of the lens which it encounters, but so as to be united in a single point upon the screen. The same thing happens for each other point of the object and its emitted rays, and the result is the production of an image, as is shown. This image, moreover, is inverted; you see how this comes by a mere glance at the diagram; but to prove to you, by actual experiment, that it is so, I will employ a curious and amusing illustration.

A little aquarium has been now placed behind a lens, and strongly illuminated by a lime light. The rays of light that pass from this aquarium and its denizens to the lens are then bent by it, as the diagram showed, and produce the enormous image which you see upon the screen, inverted, moreover, with the water surface below, the fish swimming on their backs, and everything else topsy-turvy. (The appearance of this experiment was most curious, and it elicited continued applause. Crocodiles, sea-serpents, whales, and nondescript monsters, such as might realize our idea of the antedeluvian creation, tumbled about in uncouth yet ridiculous gyrations upon the screen, which seemed, indeed, to be no screen, but rather the glass side of a vast aquarium, or section of the ocean.)

Such, then, is the condition of the eye as a lens, and such the manner in which the image which it projects upon the retina is inverted. Why, then, do we not see all things upside down?

Here comes in the second part of the eye's constitution. The retina is not simply a dead screen, receiving and reflecting the various impressions of light which fall upon it. It is a forest of living nerves, which not only can distinguish between the intensities and colours of the rays which touch them, but also recognizes the direction in which they come. Thus the inversion of the image, as far as the sensation of the retina is concerned, does not exist. If the retina perceives the rays from the summits of objects as coming down to it, and those from the bases as coming up, and thus regarding the object and not the (to it, invisible image formed on its own substance) nerve screen, sees everything in its proper position. It is a natural error to think of the eye as looking at the image formed on its own retina, but a little thought will show us that such an idea is parallel to the absurdity of attempting to see one's own face without a glass or equivalent reflection.

It is, then, upon the sensitive screen of the retina that the light rays, collected and grouped by the eye lens, make their impression. The nerves of this organ, like those of others, have certain limits to the range of their co-existent perceptions. Thus, just as we cannot hear a whisper in presence of the rattle of a railroad train, or taste a delicate flavour if mingled with burning pepper or a bitter draught, so we cannot perceive a faint impression of light in presence of another of far greater intensity. By careful experiment it has been proved that when two illuminations differ by more than sixty-four times, the fainter fades out or ceases to be appreciated. This is why the stars are invisible during daylight. The scattered sunlight reflected from the atmosphere is more than sixty-four times as bright as the stars, and it is only occasionally that a planet overpasses this relation and becomes visible in daylight.

For this reason, also, is it that until lately the luminous bodies called "flames," attached to the sun, could only be seen and studied during a total eclipse. It was not the bright disc of the sun which interfered, for this might have been covered by an appropriate screen, but the general diffused light from the atmosphere, which, being more than sixty-four times as bright as the solar flames, prevented us from seeing them. These prominences, as seen during the eclipse, I now show you by actual photographs, taken in Arabia during the eclipse of last year, and by others taken in Spain in 1860. An ingenious plan has, however, been discovered simultaneously by M. Lockyer and M. Janssen, for obviating the difficulty before experienced, and studying these flames any day without an eclipse.

The general method of prism analysis of light was here explained by the aid of diagrams projected on the screen, and its application in the above case was described.

Passing over other important, but, at the present time, less imperative matters, we will next consider the means by which the eye judges or attempts to judge of the size and distance of objects.

Within moderate limits, our judgment of the distance of objects is undoubtedly made by that surveying process on which the stereoscope is based, in which the two eyes, like surveyors at either end of a base-line, measure the angular directions of the same object, and telegraph their results to the central office in the brain, where the necessary trigonometrical work is instantly executed, and the distance thus measured.

But this applies only to moderate distances. As the astronomer finds that the diameter of the earth will give him no appreciable difference of angle by which to calculate the distance of the nearest fixed star, so the surveying eyes find themselves unable to measure the distance of far-off objects with their short base-line of 2½ inches, and are reduced to mere conjecture founded on the apparent dimensions of familiar objects, their clearness of detail, and the like. That this is so, all know from their own experience when placed in unaccustomed localities, as on the ocean, or on the prairie, or amid the gigantic vegetation of the tropics.

But I propose to demonstrate to you directly that your eyes alone cannot inform you reliably as to the distance of objects, if unaided by a knowledge of their actual magnitude. To this end I will cause various figures to appear on this screen (which we have been using already, and which is fixed to its position), in such a way that it will not be your eyes, but only your reason, which can convince you that the images viewed are not approaching from and receding into vast distances.

The first arrangement employed for this purpose was the phantasmagoria. A minute speck of light here appeared upon the screen, as from the far distance, and as it advanced, developed in the shape of a beautiful statue, which, coming nearer and nearer, towered up to the very ceiling, and seemed ready to step into the orchestra. It then retreated into the invisible distance again, and changed into a skull, which advanced in like manner, and when of frightfully gigantic proportions and such seeming nearness that a touch might topple its vast crushing mass upon the audience, it gradually melted away, and turned into a lovely face.

Again the entire stage seemed converted into a vast tunnel, from the far end of which advanced a locomotive, which, at a signal, again vanished, while the tunnel changed to a cavern of the ocean nymphs.

So, from a dark grotto came out, nodded, turned round, and retreated, a grizzly skeleton, and again some flying figures out of groups of stars.

This part of the illustration was impressive in the extreme, and, considering the numerous combined movements required for its production, reflected great credit upon the various assistants by whom it was developed. Next came the shadow pantomime.

It would be impossible, by any description, to convey an idea of the intensely ludicrous effects which were here developed. The shouts of laughter which resounded through the house, and the enthusiastic applause testified the delight of the audience. The egg-hatching by gunpowder was a capital idea, and does great credit to Professor Morton's ingenuity and sense of fun.

Next came the illustrations of persistence of vision. The thaumatrope discs were at once beautiful and marvellous, but the electric stars exceeded anything that has ever been imagined in the wildest dream of an Eastern fancy of luminous jewels and scintillating stars.

Our limits admonish us to brevity, and we therefore merely name the phenomenon of subjective colours, which was admirably displayed, and, in conclusion, express our opinion that in this, his seventh lecture on Light, at the Academy, Professor Morton has surpassed all his previous efforts.

Correspondence.

CRAYON-LIKE EFFECTS IN PHOTOGRAPHS.

Sir,—I notice in your last a paper read at the South London Photographic Society, in which the author describes a mode of producing crayon-like effects in photographs by the use of a second negative with hatched vignette lines, and he concludes his paper by stating that the process is not patented. In a specification of a patent by Mr. Sarony, published a few years ago, I find that he proposed precisely the same thing.

The patent consisted in the use of a second negative with "hatching or sketchy lines photographed upon the glass from a chalk, pencil, or other drawing of such lines." Can you or Mr. Henderson inform me if the plan described at the meeting is an infringement of this patent, and if such patent be still in operation?—Very truly yours,

Enquirer.

[Mr. Napoleon Sarony took out such a patent four or five years ago, and, so far as we understand the matter, it covered the plan described by Mr. Henderson; but whether it is still in operation or not we cannot state.—Ed.]

DISCOLOURING THE PRINTING BATH.

Sir,—I hope I shall not be considered presumptuous in stating that my practice for restoring the printing bath to its normal condition is more simple than that suggested by Mr. England in your last News, at page 293. It is as follows: as soon as the bath is the colour of sherry, I place the stock-bottle for a few hours in daylight: it becomes turbid. Filter, and it is again fit for use.—Yours truly

An Amateur.

PROTECTING GLASS BATHS FROM BREAKAGE BY GLASS DIPPERS.

Sir,—Having, in common with, I suppose, most of your readers, been induced to discard the use of gutta-percha vessels for containing the nitrate bath, I found it necessary to adopt some means of avoiding the risk of breakage attending the use of a glass dipper in a bath of the same material. Although my experience in this respect is, perhaps, not singular, the mode I have adopted of overcoming the difficulty may be of use to some. The plan consists in putting what I may term a "glass cushion" at the bottom of the bath; this I made by breaking in a mortar some pieces of window glass, and then improvising an adjustable sieve by taking two ordinary cane-bottomed chairs, and placing them one over the other (in the manner in which chairs are packed for carriage). With a little care in sifting the broken glass two or three times through the interstices of the cane, and regulating the size of the apertures, which is readily done by moving the upper chair a little, a sufficient quantity of the fragments of glass may be obtained of very nearly uniform size; in my case, about a quarter of an inch in diameter. A layer of three-quarters of an inch in thickness I find effectually protects the bottom of the bath from injury.—I am, sir, yours obediently, C. W. Smartt.

Stockwell, June 22nd, 1869.

Talk in the Studio.

Alkaline Development.—In a communication we have just received from Mr. Howard, he expresses a fear lest any one should imagine that he never uses pyrogallic acid in intensifying, because, in the formula he gives for intensifying after alkaline development, pyrogallic acid is discarded. He says:—"I should be sorry it your readers were led to imagine that I ignore the use of pyrogallic in the intensification of dry plates altogether, as, when I find the intensification slow or difficult, I avail myself of its well known properties, minute quantities only being added, citric acid being always in excess. By keeping these solutions separate, their restraining or intensifying properties can be more carefully noted than when silver is added to a pre-arranged mixture of pyro and citric acids."

Photographic Reproduction of Valuable Pictures.—The *Athenæum*, speaking of the importance of preserving carbon prints of valuable pictures, says:—"It may be worth considering, by those who advocate on public grounds the exhibiting of precious drawings by ancient masters, that a lovely work in silver-point of the head of the Magdalen—one of the Payne Knight collection in the British Museum, which was displayed in the King's Library of that institution, and in no strong light—is, through that exposure, now completely ruined. The pale salmon colour—so familiar to students—of its prepared ground has become a dirty yellow, and uneven in tint. The loaded white lights on the work are out of keeping, so that hardly a shadow of its former transcendent beauty exists. This once perfect specimen was photographed in 1856; the copy now serves to show how complete has been the injury the original has sustained. None would advocate more strongly than ourselves the exhibition of such treasures when it can be done without risk. In this case the trial has been fatal. As, however, we have in the carbon process of photography a means of showing perfect and imperishable transcripts of drawings and prints, we trust no more risks will be incurred, and that such copies will be placed in public view in great numbers.

The Brutality of the Sun.—A pamphlet entitled *l'Empereur*, just published in Paris, speaks of the character of Napoleon III. as "full of shadow which defies the curiosity of man and the brutality of the sun." We presume that by "defying the brutality of the sun" the writer means that photography does not render the character of the Emperor in his portraits. It is singular what inappropriate epithets some writers indulge in when they desire to have a fling at photography.

To Correspondents.

Collodion.—Coffee dry plates are said to keep pretty well, but how long they will keep we cannot say. The addition of a little gallic acid to the coffee preservative improves the keeping qualities. 2. You may apply the alkaline method of development described in our last to Mr. England's modified collodio-albumen plates.

W. T. Hulland.—To effect registration of a picture it is necessary to fill in a form, describing it perfectly, and giving other details. That form must then be deposited personally, with the registration fee, at Stationers' Hall. The blank forms are sold at Stationers' Hall at one penny each. If you send stamps to our Publisher, he will get you some copies; if you then fill one up and sign it, and then send it with fifteen stamps to our Publisher, he will make the entry for you at Stationers' Hall.

E. R. G.—A transparency intended to be examined by transmitted light is rarely suited for bringing into contact with white paper and examining by reflected light. The buried effect of the blacks is generally due to over-development. The best result is obtained by full exposure and development with weak pyrogallic acid. Practice is required to secure just the right condition; but with care to avoid over-development, with gold toning, and final varnishing of the film, you need not have buried shadows. An article on some points of manipulation in producing transparencies for photo-crayons will appear in our next.

H. F.—As we understand Mr. Fennemore, he suns his bath in its normal working state, being very slightly acid with nitric acid. Light will, of course, act on the solution in this state, but not so quickly as when it is neutral or slightly alkaline. Your baths may be treated as Mr. Fennemore recommends. 2. The golden syrup solution is poured on the plate when development is completed, and its effect is to stop any further action. The intensification, if any is necessary, is conducted at home after washing off the syrup. There is no danger to the negative from the action of diffused light.

A. B.—The differences in formulæ to which you refer occur in the Year-Books of different years, and the latest may be considered the most satisfactory, as embodying the latest experience. You will observe that in our last two Year-Books no mention is made of chloride of calcium, as, on the whole, we have preferred strontium in our practice. The formula with strontium, as given in the last two Year-Books, we regard as standard, and any variation in the chloride salt would require an alteration in the proportions to secure the proper equivalent of chloride, as we indicate when referring to chloride of lithium in last Year-Book. Some latitude is permissible in the amount of free nitrate of silver and in the amount of citric acid, vigour depending largely on a sufficiency of both.

K. Hearn.—An endless amount of binoxide of manganese would not be thrown down if an endless amount of permanganate of potash were added to water. As soon as all the organic matter present became oxydized, the permanganate would remain undecomposed in solution. The usual mode of estimating the proportion of organic matter present in water is effected by calculating the amount of oxygen necessary to oxydize it, and this is determined by a standard solution of permanganate of potash acting in a given time. Of course, the precipitated oxide of manganese would afford a basis for calculating the amount of permanganate employed, and, therefore, the amount of oxygen used; but that would be more easily effected by observing the amount of a standard solution of permanganate necessary to oxydize the organic matter and purify the water.

A Beginner.—The chief fault in the examples of your work is imperfect lighting. In attempting to produce a negative of a white bust in such small proportions as we find on the plates sent, great care in lighting would be necessary to get force and modelling. There is a slight tendency to fog, which may be obviated by the use of a little more acetic acid, or one or two grains per pint in your developer. To experiment with more certain means of judging what you are about, try a picture of the same bust on a much larger scale. Place your camera nearer to the bust, and get the head about an inch long. Examine carefully to see that it is lighter, so as to give some relief and roundness. If you get a picture something like those you have sent for our opinion, proceed to intensify the image, and try how it will print. 2. A saturated solution of any salt is as much as it will dissolve. A saturated solution of proto-sulphate of iron consists of 1 drachm of the iron salt in a little more than 1½ drachms of water. 3. All photographic solutions are better kept in the dark. 4. Pyrogallic acid does not keep perfectly more than a day or two when in solution in water.

Bichromate.—The first mentioned of the two lenses you mention will answer your purpose best, as being much the most rapid.

R. B. In Mr. Hughes's toning formula, to 1 grain of chloride of gold 20 grains of tungstate of soda are added, and 10 ounces of boiling water; the solution is used when cold.

W. J. A. G.—The stop should be in front of the central lens in the triple lens. No advantage would be gained by changing the position, and the lens would have a greater tendency to flare if the stop were placed behind the central lens. 2. We do not know much of the American lens you name. 3. There is not much danger incurred in washing under the tap after washing in two or three changes of distilled water in a dipping bath. Distilled water, or a mixture of water and alcohol, is best for moistening the plate before development. Thanks; we shall have pleasure in receiving an account of your photographic trip with your bicycle.

One who Tries.—You do not describe the exact nature of your failure in attempting to intensify with an iron solution. What is the nature of the difficulty you find, or what is the imperfection which follows your attempt? Do you fail to get intensity? Or do you get fog? What is the precise result you style over-development? When a photographer succeeds with one process we rarely recommend him to puzzle himself with another in which he finds difficulty; but in a case so simple as this, it is well to try and find out the precise source of your failure. The majority of good photographers use iron for intensifying as well as for developing, and, as a rule, not only save time, but get more harmonious negatives with shorter exposure than when pyro is used.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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TRANSPARENCIES FOR THE SARONY PHOTO-CRAYONS.

We have recently devoted some time to experiment in producing transparencies for the Sarony photo-crayons, in the course of which we have made some observations the record of which may be useful to some of our readers.

We may generally premise that a bath and collodion which were in good order and working well for negatives gave excellent results in producing transparencies, although the same development was not employed. In some cases the glasses were coated with a very dilute solution of albumen with most satisfactory results: the albumen gave complete immunity from risk of dirty plates; it secured the adhesion of the film (a consideration of importance where development is often prolonged, and a toning process is necessary); and often gave increased richness and force to the image.

Exposure and Development.—For transparencies of this kind, whether intended to serve as photo-crayons or for transfer to paper, we prefer pyrogallic acid development. With iron the exposure is shorter, and a soft image is obtained; but great care is required to avoid a trace of deposit in the transparent parts, which, in the finished picture, lowers the whites and destroys purity and brilliancy. Moreover, the iron-developed image is not only colder in tone generally when first produced, but it has a tendency to remain cold, no matter what mode of toning may be adopted. A pyro developer, on the other hand, gives a rich coloured image in the process of development, which readily assumes a warm black tint in toning. The development is very slow, and the deliberation with which the image appears and acquires vigour gives the operator leisure to observe carefully, and stop the operation just at the stage which appears best, whilst with iron a few seconds too long will produce serious over-development. The strength of the developer depends somewhat on circumstances. The three-grain solution employed by Mr. Burgess in producing his Eburneum pictures gives very good results, but, on the whole, we recommend a weaker solution, as giving equally good results, and, by the slowness of the operation, giving plenty of time to watch the operation without much risk of over-development. A developer producing good results stands as follows:—

Pyrogallic acid	1 grain
Citric acid	2 ,,
Acetic acid...	20 minims
Water	1 ounce

The question of exposure is, of course, intimately connected with development, and, with pyrogallic acid especially, a full exposure is best. We have repeatedly been asked the question, how long should the exposure be to produce a transparency for one of Sarony's photo-crayons, assuming the original negative to be of the usual card size? As we cannot answer without many qualifications—as regards lens, light, &c.—we may possibly afford some data by describing, as nearly as we can, the conditions under which our recent experiments were conducted, and the exposure given. The heads in the negatives employed were about one-third of an inch long, and, in the transparency, four inches long, thus making an enlargement of twelve diameters. A portrait lens of eight inches focus and about two and a half inches aperture was employed. The light was dull but variable, and the exposure varied from six minutes to twenty minutes. It should be stated that the negative did not receive the direct light of the zenith, or even of the horizon, but merely the light reflected by a mirror from the northern sky. The negatives employed were unusually dense, and even hard.

With the pyro developer, a few seconds elapsed before any trace of an image appeared: it then came out very slowly, appearing as a well marked positive, its exact quality being readily distinguished, the iodide forming a cream-coloured ground, upon which the black image was gradually developed. The appearance assumed by the picture in this stage afforded a fair criterion of the effect of the finished picture. The process of development occupied generally two or three, or four minutes. The fixing was effected by strong hyposulphite of soda, which answers the purpose better than cyanide of potassium, especially if there is no trace of fog or abnormal deposit on the lights to be removed. We know of some photographers who prefer to plunge the developed picture into a dipping bath of hyposulphite of soda without washing the iron solution off, a richer image being thus obtained than when the plate has been well washed before fixing. As this increased richness is, however, due to the formation of sulphide of silver, it is doubtful whether it is quite wise or safe to adopt the course in question.

The question as to the best mode of vignetting has more than once been asked. There are, doubtless, various modes in which it can be efficiently managed; but where, instead of using an ordinary camera, a dark room is employed for the operation, and the image can be seen on the sensitive plate as on a screen, then the best mode of vignetting consists in the use of a piece of card with an irregular oval aperture held in the hand and moved about during the whole time of the operation. This plan enables the photographer to use his judgment and taste, so as to secure a vignette with gradation suited to the specialities of the subject, instead of the stiff regular oval too often seen. As the image is before the operator, he can screen off any portion of it he may desire, and so materially modify the light and shade upon it; and, being able to do this so that the mask's edge shall be quite out of focus, there is no danger of lines or definite marking being produced by such masking.

Toning.—Excellent tones can be obtained by means of bichloride of mercury, followed by dilute solutions of hyposulphite of soda, ammonia, or sulphide of ammonia; but, on the whole, we prefer gold toning. Mr. Burgess, as we have before stated, uses a very strong gold solution, the proportion being 1 grain of chloride of gold to 1 drachm of water. It should be borne in mind that this is of Mr. F. Sutton's neutral chloride of gold. We mention this because, if the ordinary acid chloride of gold be employed of such a strength, great risk of reducing and bleaching the image would be incurred. We prefer, where a large surface is to be covered, a weaker solution, as involving less risk of lines or stains from the irregular flow of the solution over the large plate. A solution of chloride of gold containing from 1 to 2 grains in an ounce of water will give very good results. The fixing solution should be very thoroughly washed away, and the gold solution then poured over the plate, which should be held over a piece of white paper, so that the progress of toning can be carefully watched. It is important to see that the action is complete, not merely on the surface, but right through the film, otherwise the result of the imperfect action will be painfully apparent in the finished picture.

It is worth noting, that if the image is a little lacking in vigour from under-development, the gold toning operation, whilst improving the colour, will tend to make it a little weaker and lighter still; whilst if the image has been over-developed, it will suffer no apparent bleaching, but will appear to acquire additional intensity in toning. A properly exposed and well developed transparency acquires depth and force, as well as richness of colour, by the action of the gold solution, and assumes a rich warm or neutral black.

There is one very important facility which gold toning offers to the operator: if, in consequence of over-exposure or over-development, the image is a little too dark, or has a trace of fog on the lights, after thoroughly washing off the gold solution, the strong hypo may be again applied, and it will effect a marvellous improvement. Any trace of foggy deposit, and also an infinitesimal portion of the silver forming the image, is converted by the chloride of gold solution into chloride of silver, and this being dissolved by the hypo, fog is removed and the depth of the image reduced. The question will probably occur to some, if the toning operation converts a portion of the reduced silver forming the image into chloride of silver, is it not absolutely necessary that a second fixing operation should be employed, in order to prevent the picture darkening in the light? To this question we answer no, not unless it is necessary to reduce the depth of the picture. It must be borne in mind that there is no silver at all in the transparent parts which will form the pure whites, so there can be no darkening there. The silver forms the shadows and half-tones, and when a portion of the reduced silver is converted into white chloride, it makes the picture appear slightly lighter; when this chloride shall have been again darkened by the action of light, the picture will simply assume its original and proper depth, the lights in no case undergoing change. In all cases, or at least very generally, the operation of varnishing slightly reduces the depth of the picture.

Fragility of Photo-crayons.—There is one argument which has been offered as detracting from the value of the new style of portrait, namely, that it is on too fragile a support for a valuable portrait. It seems scarcely necessary to point out that the same argument would be of avail as detracting from the worth of a large portion of the treasures of the art world. All the glass and porcelain of rare beauty and value, every vase, every tazza, every statuette, every ornamental figure or vessel, in short, in existence, of fragile material, must be condemned on the same principle, as well as all the looking-glasses and vitreous manufactures in the world. It scarcely requires pointing out that, as a rule, frangible objects are treated with a degree of care proportioned to the risk they suffer, and whilst a perfect immunity from the possibility of breakage would undoubtedly be better, yet, as a fact, frangible objects—looking-glasses, for instance—owing to the care they receive, do not suffer injury much more frequently than much more substantial and apparently imperishable articles.

Modes of Producing Photo-crayon Effects.—Mr. Sarony recently sent us an example of the crayon effect produced by hatching on the transparency with water-colours. The result was decidedly inferior to that produced by the hatching in crayon or by lithography on the drawing-paper used as a backing, the sharpness of the water-colour line on the transparency being much less pleasing than the soft, broken chalk line on the drawing-paper. The same is true of the hatching photographed on the transparency from a hatched vignette negative, in the manner, for instance, described by Mr. Henderson. These methods lack the soft, indefinite character of the chalk line on drawing-paper, and have a less artistic effect. Nothing, in our view, in this kind of work, answers the purpose better than a well-selected vignette design on a good tint, with a few supplementary lines added with a crayon, to make each lithographed vignette suit the special requirements of each individual portrait. This supplementary treatment will be adopted as a matter of course by photographers of artistic taste and ability.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Patent Laws and Patent Right—Carbon Processes and Mr. Blair's Book—Improvements in Silver Printing: Mr. Davis's Method, and Mr. Durand's Method—M. Salomon's Secret—Modes of Decolourizing the Bath—The Societies.

I have been much interested, of late, in the discussions in regard to the patent laws which have taken place in Parliament and in the public press. The right of patent protection at all, not the existing law, has been the subject of one of the periodical attacks which, during late years, it has been the habit of a certain class of doctrinaires to indulge in. Mr. Macfie, in the House of Commons, takes a bold position, and denies the right of any man to a property in his ideas. It has always seemed to me, in my simplicity, that a man's ideas were the most absolutely real property he possesses, and that his right to reap the harvest they may yield is as indefeasible as his right to the produce of his broad acres. I have never been able to even see the abstract justice of making copyright and patent right temporary property, and the results of other forms of exertion permanent property. I cannot understand why the property in a book produced by spinning the product of the brain should pass away from a man in a certain number of years, and the property in a piece of calico made by spinning cotton should remain the property of the producer until he chooses to exchange it for another form of property. Nor do I ever find in the arguments used anything which in the slightest degree militates against the justice and policy of the principle of patent protection. All the arguments are derived from the imperfect working of bad patent laws, and strongly indicate the need for reform, not for abrogation.

It appears to me that one of the most crying evils of the present system is constantly illustrated by the specifications of photographic patents which I find published in your pages. I refer to the want of an efficient system of examination before patents are granted. The same principle, often precisely the same thing, is continually being patented over and over again. How often, for instance, has the same thing been patented in producing plates for photo-mechanical printing, and especially for producing grain in such plates? Your last issue contained some examples of this very thing. An efficient method of examining claims to ascertain if an idea has been specified before, or definitely published before, would save inventors much time, much anxiety, and much money, and would reduce litigation, and give a value to patent productions and patent records, which would be a great public gain. The case mentioned in your last, in which Mr. Pouncy, in a new patent, simply attempts to protect two already published ideas or methods, is another pertinent illustration. To accept an inventor's money for the patenting of something which, being already published, unknown to him, he cannot maintain, seems to me very like robbery. I fear, however, that so long as the law officers of the Crown derive a very handsome revenue from such a source, reform, in this respect, will be very tardily obtained. A recent paragraph in the *Times* is very suggestive in relation to this part of the question. With your permission I will quote the paragraph here.

> "The official estimate is that in the current year fees amounting to more than £12,000 will be paid to the English Attorney-General and Solicitor-General for examining and passing patents, and more than 1,000 guineas to their clerks. It would be improper to say that patentees provide law officers for the Crown, it may at least be remarked that the patentees pay a very large sum in fees to those functionaries: £3,450 will also be payable to the Scottish and Irish law officers and their clerks, as compensation for their not being now allowed a share of the spoil. The salaries of the clerks in the Patent Office and payments to gentlemen who abridge specifications or patents at 7s. each will absorb £16,000 in the year; and £19,000 will be devoted to printing and drawings to explain patents."

Meanwhile, surely it is worth the while of inventors to study published records a little more closely before wasting time and money on quasi-inventions, details of which are to be found in the recognized organs of information with which every one interested in a subject is supposed to be acquainted.

Reference to patents naturally brings to mind the carbon process, and the various patented and unpatented operations connected therewith. I am an old carbon experimentalist, and, so far as mere experiment goes, a tolerably successful one. The mere operations in carbon printing have had a charm for me. Apart from the superior permanency obtained, it has always struck me that the mode of printing by imprisoning a certain amount of a pigment, which could be regulated at will, was more philosophical than silver printing; Mr. Blair's pamphlet has therefore been to me a source of great interest. Some of his methods I have already tried, others are distinctly and very ingeniously novel. The mode of producing temporary transparency by turpentine possesses many advantages, not the least of which is gained in the fact that the image is in such immediate contact with the paper that it may be said to be formed partly in the texture as well as on the surface, and incapable of chipping or peeling off the paper. The same advantage is gained in analogous processes published by Mr. Swan two years ago, in which paper rendered transparent by paraffin formed the basis of the tissue, the paraffin being eventually removed by benzole, and pure opaque whites obtained. That process, although very elegant, would require a special tissue, for I apprehend that the paper must be treated with the paraffin before the pigmented gelatine is applied. Mr. Blair's method, however, it appears to me, permits the use of the ordinary tissue supplied by the patentees of Swan's process. This tissue may be sensitized by floating, care being used to prevent the paper backing from becoming yellow with the bichromate, and, after it is dry—having been treated with turpentine—exposed from the back and developed satisfactorily. A slight experiment I have tried proves this. But there *is* an appreciable amount of texture which, for many subjects, however, is not seriously objectionable.

With all my interest, however, in experimenting with ingenious carbon processes, I am bound to agree with you in reference to the commercial utility of the various processes. Many of the modes referred to are very interesting to amateurs, and might be useful to small portraitists; but there can scarcely be a question, I think, that where actual work is meant, Swan's or Johnson's method, even with two transfers, is sufficiently systematic, orderly, and trustworthy to far transcend, for practical purposes, any of the modes of evading transfer operations. I see from your last that the method of making tissue temporarily transparent and finally opaque, narrowly escaped being patented. I say escaped, because I presume the prior publication referred to in your last precludes any subsequent monopoly. It is curious enough that the other operation included in the same patent—I mean the mode of colouring a carbon picture before transfer—has also been published, and is mentioned in your work on Pigment Printing.

It is not a little interesting to note that notwithstanding the progress of carbon printing towards the highest simplicity in manner and perfection in results, and the almost inevitable ultimate prevalence of such a mode of printing, yet improvements in silver printing steadily progress at the same time. And it is worth noting that improvements in printing abound in a much greater degree than in negative work. The wet collodion negative process seems to be very nearly perfect; an occasional improvement or modification in developers, a real or announced superiority in collodion, a simpler and more certain mode of correcting a bath, or such other incidental gain in facilities, now and then reaches the operator. But these rather smooth his path, and remove possible difficulties, than make any marked difference in the quality of the results. In skilled hands absolutely perfect negatives can be produced at will whenever the subject and light will permit. But printing processes progress, and definite gain is every now and then secured. I think the method published by Mr. Davies at the Edinburgh Society promises to be a definite gain. The method described strikes a printing experimentalist at once as adequate to the end, and what I have seen of the results fully confirms this view. Nothing can be more perfect than the texture obtained, and I cannot help thinking that with moderate care in production the process offers a much higher promise of permanent results than most of the processes of silver printing in operation.

I have tried the method of printing with a white pigmented collodio-chloride, described by Mr. Durand in your last, and am much charmed with the result. I ventured to use, in place of kaolin, oxide of zinc as a white pigment of better body and purer tint: it answered admirably. Either on glass, mica, or paper, a collodio-chloride so prepared gives charming results, with a purity of tint and a delicacy of matt texture I have not seen produced by any other process. I have also tried a sample of Dr. Diamond's permanent sensitive albuminized paper, and, so far as limited experience goes, decidedly prefer it to the other permanent sensitive albuminized papers in the market, as giving a better result with less trouble.

So it seems that, according to Mr. Bovey, there is a secret in M. Adam-Salomon's operations after all. Mr. Bovey appears to think that the printing bath has some special character, and he fancies that it is possible that gelatine in the printing bath explains the richness and vigour which characterize the works of the great Frenchman. I have tried the use of gelatine in the printing bath, and I know that it gives prints of unusual vigour and richness; but, with much respect for the opinion of Mr. Bovey as a capable practical man, I am scarcely willing to believe that M. Salomon has any secret beyond that embodied in great ability and great care. In the first place, I am, although an old man, sufficiently confiding—credulous, if you will—to believe the statement of a gentleman, unless I know something of his character which makes me doubt his word. Now, M. Salomon has been so frankly communicative, and, although not obtrusive, so accessible, that when he states his prints are produced by a simple 70-grain bath, I feel bound to accept his word. And I must confess that I see no reason to suspect a secret. I see others in this country (I will avoid mentioning my own experience) produce pictures as technically perfect as those of M. Salomon; I mean as brilliant, as delicate, and as excellent in tone. I see others, also, produce pictures as artistic as M. Salomon. But it is the perfect union of all perfect qualities, technical and artistic, which distinguishes the best pictures of M. Salomon, which makes them stand alone, *sui generis*, the wonder and admiration of—and, I am glad to say, the model earnestly followed by—so many appreciative and earnest photographers.

It seems difficult to get rid af printing and printing operations in this month's "Echoes." I want just one word on Mr. England's communication on decolouring the printing bath. Mr. England is another of the practical men whose lightest words deserve consideration; but I cannot help thinking that his mode of decolouring the bath is unnecessarily troublesome. He says those who try boiling will never again try kaolin. That I can fully believe; but surely few photographers have used kaolin of late years. Its use for clearing the bath is wasteful, troublesome, and clumsy. "An Amateur's" method of decolouring by sunning is simpler than Mr. England's, and quite as efficient. But I object to both, as effecting too much. Until the albumen in solution in a printing bath has discoloured it, by partial reduction, I think its presence is beneficial rather than injurious: it checks the tendency to solution of the albumen on the subsequent sheets floated on it, and it aids in giving richness. Either boiling or sunning, however, gets rid of this albumen in solution, by throwing it down, whether it is discoloured or not. I have found that the addition of a few drops of a solution of chloride of sodium, and shaking, take down all the reduced particles of albuminate of silver which discolour the bath, in a simpler and more efficient manner; doing, at the same time, less harm than any other method I know. I thought that method was well-known and commonly practised now; certainly it ought to be.

The Societies have, for the most part, held their last meetings during the month. At the Parent Society the promised demonstration of the new carbon process by Mr. Johnson was a very complete success, and interested and satisfied every one; and a capital *resume* of Mr. Gordon's gum-gallic process by Mr. Spiller, illustrated by the exhibition of some of Mr. Gordon's negatives, added additional interest to the meeting.

At the North the proceedings were of a conversational character, whilst at the South there was an absolute plethora of matter. Besides the exhibition of many objects of interest, the reading of the annual report, the election of officers, and alteration of rules, two distinct subjects were discussed during the evening. First, an interesting method of producing crayon vignetted enlarged transparencies, described in a paper by Mr. Henderson; and second, the advantages of alkaline development, introduced in a brief paper by Mr. Howard. In many respects the South is the most flourishing and active of all the societies in existence, and its proceedings are always harmonious and interesting.

The Edinburgh Society is another example of great vitality and activity. Mr. Davies' paper at the last meeting appears, as I have said, to be a most important contribution to printing resources.

At the Liverpool Society, besides an interesting paper on "Exposure," by Mr. Green, an unusual variety of useful topics were discussed. Mr. Mawdesley showed results illustrating the great latitude in exposure possible with collodio-bromide plates when the development was properly managed. Mr. Forrest, in a discussion as to the advantages of plate and crown glass for negatives, gave the palm to crown for anything not exceeding 9 by 7 inches. Mr. Wilson called attention to the value of the double chloride of gold and potassium for toning. Mr. Henderson and others—in fact, almost every member—seems to have had some valuable information to communicate. When photographic societies can keep up such meetings they become sources of rare pleasure and profit.

MASKS AND FACES.

BY PROTAGORAS.

Part I.—Pleasant Portraits.

If the statistics of photography could be collected, what a startling number of portraits would be found to have been produced since the art began! And, considering the number of persons who earn a livelihood, not only in England, but all over the world, by taking photographic portraits, what a vast number must still continue to be produced! But if it were possible for all these to be passed before a good judge, to separate the really pleasant portraits from those that were not, what an extraordinary difference would be found between the numbers ranged on the right to that on the wrong side! If this be the fact—and surely no one can affirm otherwise—an interesting enquiry might be started, why so many are *not* pleasant, and why so few are? It is the desire of every person who sits for his or her portrait to have a pleasant one. It is the desire *and* the interest of every photographer to produce a pleasant portrait. Then why are not pleasant portraits the rule, and unpleasant ones the exception?

This is an interesting and an important enquiry, and if portrait photographers had a philosopher among them, it would form a fitting subject for searching examination. If there be such, I commend this theme to his serious consideration. Who knows what might not arise from his valuable researches? The problem is simply stated: if occasionally a pleasant portrait be taken, why not frequently? If one can be made, why not many? Supposing photographers were examined, I do not think there would be any common agreement among them as to the cause of their failure. One would blame his chemicals, another his light, another his operating room, and so on. Now, if these are valid reasons—and people would not assign them unless they thought so—who can tell what our guide, philosopher, and friend might not discover? He might elaborate from his experience, as well as from out of the depths of his own consciousness, a new collodion that might Rachel-ise the sitters and make them beautiful for ever; might discover a bath to make the dark fair, and the fair fairer; might find out a developer that would bring out "wreathed smiles" from surly looks, and brilliant flashes from stupid eyes; might formulate a new lens that would record all the good points in the face, and carefully suppress the bad ones; that would never register crows' feet; would make crooked noses straight, and straight hair curly; make youth beautiful, and age picturesque; or he might arrive at such a permanent printing process that each print should be not only "a joy for ever," but also "a thing of beauty" at the same time.

If the faith be well founded that some persons have in processes and chemicals, all these things may be possible; and, if we believe advertisements, many similar advantages are easily obtainable even now. Does not the front page of the *Times* tell us daily where we may obtain our children's portraits by the "instantaneous process?" And is it not written in the Chronicles that the magnesium and thunder-and lightning instrument can take them quicker still? Why are not all portraits taken by the "instantaneous collodion" which was advertised so long, no qualification being made as to the condition of the light or the nature of the lens? Seeing that the Salomon portraits are so justly esteemed, why are not all portraits taken by the lenses he uses, by such collodion as he employs? All these the advertisement pages freely inform us can be obtained at one or the other of the dealers' warehouses. Why, I ask, are not Salomon portraits more numerous when such facilities are provided? I read the other day the business circular of a photographer who, after extolling the beauties of his portraits, confidentially explained to his might-be patrons why they so far excelled all others: they were taken with the *patent lens.* This was a satisfactory reason, and, having possessed himself of this magical instrument, why, under a bushel, should he hide his light when he had the patent lens to use it with? Doubtless this man never fails. I am sure if a customer were to put the question, he would indignantly deny the impeachment; he would appeal to the life-size portraits round his room, all in gilt frames, three guineas a-head, duplicates half-price, finished in oils, as big as a tea-board, and not unlike one; and he would ask if he thought *they* were failures. Well, perhaps, to prevent a breach of the peace, the party questioned might hesitate saying what he thought, and stammer out a compliment; then the convincing reply would be given by the production of the veritable patent lens, and the customer must be, after seeing and touching it, a more than modern Thomas of Didymus if he did not acknowledge that this man knew how to take a pleasant portrait.

I have referred to a possible philosopher, who, deeply imbued with the faith in apparatus and processes—and in photography I never met with a philosopher who was otherwise—might investigate their deepest depths, and find out all that I have surmised; but I do not believe he would by these means find the hidden clue to the constant means of producing a pleasant portrait (but what I believe is neither here nor there). Supposing him, however, to have done so, I certainly think, if he gave his information free to the world, that photographers should *promise* to raise a statue to his memory—a good solid statue (say) of metal: if in Iron, let it be sulphate of iron; if in Silver, then nitrate of silver; or if in Gold, then what so proper as chloride of gold? You see, photographers have great choice. But if, to repay himself for his earnest and arduous labours, he chose to take out a patent, and to charge a small royalty for his valuable discovery (by which other men might make rapid fortunes), why then the obvious duty of all who profited by his discovery would be to decry him at once as an impostor (for everybody had done that before), as a hindrance, a clog, an enemy to progress; and, while picking holes in his patent—meanwhile, however, filling their own pockets—their duty would be to run him down and jump on him. That is the way to serve the philosophers. Verdict: "Sarve him right!" There is a precedent for all this; we have done it before, and we will do it again. My own private opinion is, that these philosophers are a bad lot. There is one I have in my mind's eye, who has been philosophizing and patenting for these last ever-so-many years. Well, what has he got by it? He patented bitumenizing our glasses, so as to keep the image on the surface; but we would not have it. Then, when we were in a fix, and wanted a wider angle for our pictures, he patented a lens for squinting, so that a view could be taken behind as well as before—in fact "boxed the compass"—and devised rather clever traps to carry out the idea; but it was no go, we gave it the go-by. Now others are in the field, and we are serving them the same; and if we do not stamp them out, it is not our fault.

Of course there is another side to this question. We may indirectly—and possibly directly—injure ourselves by repressing, if not crushing, these ingenious fellows. But what do we care? The art may suffer, but, so long as we gain, what does it matter? Besides, cannot we always say we are for progress without limitation or hindrance? Suppose our prints *do* fade, and our negatives *are* disagreeable, are not the public obliged to come to us? Photography will last our time, and what more do we care? Archer did not take out a patent; he gave his discovery to all the world. Between you and I, I believe he did not know the value of his collodion process, or I think he would have patented it; but if he had, should not we have found means to have circumvented him? What right had he to anticipate, unless it was to benefit us? It is true he died poor, and his children will remain so, for all that we shall do to prevent it; but that is the way of the world!

But what has all this to do with taking pleasant portraits"? Well, to be candid, I am afraid it has not much to do with the question, but I have been led into it by one thing and the other. If there is one thing I particularly hate (in other persons) it is digression—jumping from one thing to another; but to one's own faults one must be a little blind. The subject I commenced with I feel I have not even opened, and, as the article is so far advanced, it is too late now to make any advantageous progress. By nature, I confess, I am chatty, gossipy, not to say garrulous, especially when I am on my favourite hobby; and if there is one thing I like to chat about, it is portraiture. I have, in my time, done a good deal in that way, and know as much about it as here and there one. I propose from time to time—now I am in the humour, and it is not often that I am—to have these chats; that is, if the Editor will indulge me in my own peculiar way. Meantime, I must suspend my gossip, and promise, in those well-worn words, that the subject is

To be continued in our next.

SECRETS AND PATENTS.

BY "RESPICE FINEM."

It has often occurred to me of late that a curious misunderstanding seems to have grown up amongst many photographers in relation to discoveries, inventions, or improvements in connection with their art, which misunderstanding its whole history has tended somewhat to foster. Photographers have, in some degree, realized the state of the early Christians, which it has been the aim, never fulfilled, of some few amiable enthusiasts, in almost every age since, to follow. They, the disciples and first converts, in the early time, when they were a people separating themselves from the world around them, separating themselves from its manners, from its creeds, and from its hopes, "had all things common." And photographers, to a large extent, so far as relates to information and experience, have had all things common, neither has any of them said that aught of the information he possessed was his own: it has been held for the common good. New discoveries, new processes, new "dodges," have been poured freely into the common treasury, the *kudos* gained by communicating, as a rule, being the indefatigable experimentalist's only reward. This has been a great good to the art, and a great boon to its devotees. To this, in a large degree, the art owes its amazing progress, and to this is due largely the fact that, with scarcely one individual formally educated to the practice of the art, so many accomplished exponents of it are found in the profession.

But there comes a time—indeed, there are occasions and circumstances in all time—when there is a limit to this unhesitating freedom of communication. Much of the information which has been so freely communicated has been of that character which, being withheld or monopolized, would not have enriched any one, but, which made known, is valuable to all. In some cases, valuable processes, which might have been protected and sold to the advantage of the discoverer, have been freely given to the public, and the gift has not always, it is to be regretted, been regarded with sufficient recognition by those benefitting by it. But there are some discoveries, inventions, and improvements which, from their nature, are inevitably the work of practical men—men to whom their time and brains are capital. The discovery or improvement may consist of a combination of known things, each comparatively useless in itself, but which, by combination and addition, produce a perfect result, such conbination being arrived at by months of careful experiment. Or it may be the happy thought, the result of constant experiment in a given direction. In either case, it should be perfectly clear that the new idea or combination is the absolute property of the originator. He may, if he choose, work it in secret to his own benefit, and the photographic community be none the better for it, and no one can complain. But the State, knowing that secrets never enrich a nation, offers to inventors and discoverers every inducement to give publicity to the result of their studies, and guarantees them a monopoly for a period, on condition that they shall publish full information regarding their inventions and discoveries. Now the practice in the photographic community of late has been—as I presume it very probably is in other communities—to be wroth with the public benefactor who takes the shape of a patentee, and asks for a share of the profits which his improvement is about to place in the hands of all who use it. "We knew," they exclaim, "all the individual parts of this discovery before: what a shame that their combination should be patented!" It is true that they before did not use these individual parts, because, uncombined, they were useless, and no one had before discovered that a beneficial combination could be made. But such a discovery having been made, they are anxious to profit by it without restriction, and are ready to inveigh against the illiberality of the discoverer for not giving the community the benefit of his efforts instead of retaining some interest in it himself.

All this is, of course, the result of thoughtlessness, and of the education in free communication by which the ideas of photographers have been shaped. But it is an unwholesome form of thoughtlessness, and its tendency is not likely to be beneficial to the community. Men do not like to be taunted with illiberality or unfair monopoly, and are apt in future to keep secret that which they feel assured is unknown, and work it for their individual benefit, rather than risk a possible struggle for their patent monopoly, and an assured chorus of croakers crying out, "We knew all this before!" Several illustrations have of late years occurred in the history of photographic progress. Mr. Swan's carbon process affords a notable instance. Until he had published his patented process, no commercial carbon process was in existence. When it was announced that he had discovered a practical method of producing perfect photographs in carbon, the statement was received with a mixture of hope, curiosity, and doubt. I remember seeing a letter from an able man of science, who had devoted years to practical photographic experiment and research, in which he distinctly expressed a conviction that if the process depended on any method of covering a surface with a mixture of pigment and a vehicle, and subsequent removal of the unsunned material, the thing was commercially impracticable, and must issue in failure on any practical scale. When all the details were published, and the method proved a success, the outcry arose that all the individual parts of the process had been known before, and that Mr. Swan had no right whatever to a property in the combination. The fact that he had spent many months of time and some hundreds of pounds in experiment in securing a successful combination was ignored; and even at this day there are some few who would willingly rob him of praise, profit, or property in a process which is such a boon to the art, and which he so assuredly first gave to the public in a commercially available form.

Another case illustrating the point is found in the photo-crayon patent of Mr. Sarony. In this case the valuable combination of known things, by which a pleasing result is obtained, was probably rather the result of a happy inspiration than of laborious or costly experiment. But still some experiment and some cost were necessary to perfect the thing, and much effort and much cost to bring the thing efficiently under the attention of the photographic community, and enable the novelty to be used as a stimulus to trade. It is clear that without the effort and cost the community could not have been made so fully familiar with the novelty, and equally clear that no one could undertake such a task without hope of re-imbursement. Mr. Sarony undertook the enterprise in a liberal and spirited manner, seeking his remuneration, not in heavy licence fees, but in a small profit on the designs he supplied. But, even with this liberal aim, he did not escape the usual charge of illiberality on the one hand, and of having patented something already known on the other, without a single attempt to show, however, that the thing had been known before.

My especial aim is to point out that, admitting for a moment an evil at all, the system of decrying patents must have a tendency to produce a far worse evil. Photographers certainly cannot demand, nor can they even expect, that all inventions shall be given freely to the public; and if patents be discouraged, a system of secresy will probably ensue which will be infinitely worse in its effect on the progress of the art. When an invention or discovery is patented, it is published, and its monopoly is for a limited period only, the public eventually acquiring full possession of it. And even before this it begins to fructify, by stimulating and suggesting other improvements. A secret, on the other hand, is always sterile, always unproductive to all save its possessor, and often comparatively useless to him, for want of opportunity to utilize it fully.

Take an example: Some years ago M. Joubert issued some very admirable examples of rapid carbon printing, by a method which he called the "Phototype Process," in which the results were understood to be produced partly by chemical and partly by mechanical means. The results were by far the best which at that time had been exhibited, and the method was manifestly rapid and economical; the inventor voluntarily illustrated one monthly issue of the Photographic Society's Journal by its means. The process was not patented, but it was kept a secret, and remains a secret to this day. Past experience of the costliness and inefficiency of the present patent law and of the unfairness of the public had given M. Joubert more confidence in secresy. If it had been patented at the time, it would now possibly—shortly, certainly—have become public property, and it might, in the meantime, have suggested other valuable operations. Instead of which, like the talent wrapped in a napkin, it has lain idle and barren. Probably, had it been patented, many would, as usual, have cried out, "We knew it before!" Unpatented, however, it remains unknown.

Take another illustration: An English photographer has recently invented a method of producing enamel photographs of unusual excellence. His recent ceramic pictures might fairly challenge comparison with the best examples of the work of M. Lafon de Camarsac, another secret worker of rare skill. Mr. Henderson keeps his method a secret, and he justifies his course by explaining that it has cost months of labour and some hundreds of pounds in money to bring the process to perfection. Surely not the most Quixotic of dreamers could expect Mr. Henderson to throw this costly invention into the public stock. If he chooses that mode of protecting himself, his secresy is undoubtedly easily justified. But mark how much more valuable the monopoly conferred by patent would be. As the matter stands, Mr. Henderson must work the process himself, or sell his secret to one buyer, and his own facilities for making beneficial use of his discovery are thus contracted. If the process were patented he could license many photographers to use a beautiful—and, we believe, lucrative—process to their own advantage, the profit of the inventor, and the credit of the art. But this is not all. Mr. Henderson, in a letter in these pages a year or two ago, stated that, incidentally, he had, in the course of his experiments, discovered a new and valuable method of intensifying, as well, I think, as some other improvements, but regretted that he could not impart them for the benefit of the community without emperilling his enamel secret. If the process had been patented the public could have had the benefit of the process for a reasonable payment, and, in addition, might have had the benefit of Mr. Henderson's liberality in giving details of his other discoveries. With Mr. Henderson's own experience, I cannot understand his hostility to another patent. So far as the public are concerned, however, it is clear that a patent of any kind is better for them than a secret. Whether a patent be valid or invalid, it involves an amount of publicity for some improvement which otherwise would not have been secured, and so in all cases benefits the community.

I know that it has been proposed to supersede both patents and secrets by instituting a system of rewards for inventions and discoveries. This would never work satisfactorily, for few men would willingly accept as a gift a reward for their labours which they could claim as a right. Under the patent law the inventor is paid by those who make beneficial use of his invention. Under a system of rewards from a general fund no such equitable distribution of the charge could possibly be made.

The subject of patents is a very large one, and I have not attempted to estimate its general bearings, but I am anxious to point out to photographers that they have a direct interest in encouraging inventors to go to trouble and expense in working out good processes in the hope of a brief patent monopoly; and that they have a direct interest in encouraging patents in preference to secrets, and that the disposition of some to grumble at "patent restrictions" is at least impolitic and unwise. Let them remember that no photographic patent has yet interfered with public benefit, and that the chief opponents to photographic patents have been rival monopolists.

A NEW HELIOCHROMIC PROCESS.

BY M. DUCOS DU HAURON.*

After several years of labour I have been able to resolve the problem of obtaining and fixing colours by photography, by a method which I believe to be perfectly original. A journal, published in my immediate neighbourhood, *Le Gers*, has just completed a series of articles (contained in the editions of the 11th, 13th, 16th, 18th, 20th, and 23rd March, and 1st and 6th April, 1869), detailing at some length the principles of the process, for which I have secured a patent dated 23rd November, 1868. The memoir will shortly be republished in the form of a pamphlet.

I shall feel much pleasure in describing my process to the French Photographic Society, and have placed at their disposal several specimens, which shall be followed by others. I do not pretend to assert that these first essays are not far from being perfect, and there yet remains much to be done; in fact, the production of good results will require the aid of a set of apparatus itself of the most perfect kind, and involve the manufacture of compounds which have not yet been created. But, as a demonstration of the process, the specimens sent will, I believe, show how decisive is my system.

It would have been better, perhaps, to have deferred these remarks until the presentation of my pamphlet, which is at present undergoing careful revision; but it has been represented to me as politic to submit my process at once to the Society, as another method of heliochromy, more or less analogous to mine, is on the point of being published. My priority of invention will be secured to me by the date of my patent.

The following explanation of the process was communicated by M. Davanne. He said:—

Two memoirs have recently been published on the subject of heliochromy, the one by M. Ducos du Hauron, in the journal of *Le Gers*, the other by M. Charles Clos, in *Les Mondes*. These communications have much analogy between them, and both start from the same principle, which is, that instead of endeavouring to reproduce on one and the same surface all the natural colours indistinctly, it has been sought to analyse and separate them, so as to obtain three impressions corresponding to the three primitive colours—red, yellow, and blue—and these three monochrome results, presenting all the gradations of tint which photography reproduces so accurately, being combined by some system of synthesis, are blended together, and yield all the other colours, inasmuch as the three together contain all the elements of the spectrum.

As regards the question of priority, there is no doubt that both inventors have independently of one another conducted their investigations, which have resulted in the production of the two memoirs; and it has happened that while on the one hand M. Ducos has asked me to introduce to the Society the subject of his invention, M. Clos has, at the same time, called attention to his memoir, and promised an abstract of the same for the *Bulletin*. As I have at present in my possession not only M. Ducos' publication, but also the results of his preliminary experiments, I propose to say a few words on the subject of that gentleman's invention *en attendant* the issue of the promised pamphlet.

The discussion of theoretical maxims will, I fear, lead us too far, and therefore, to be brief and intelligible, I will confine myself to the practical portion of the subject.

M. Ducos du Hauron has prepared a circle divided into twelve segments representing the solar spectrum, and this he has endeavoured to reproduce by his process. To effect this it is necessary to obtain three impressions. The first should give the maximum blue for one of the segments, with diminution of intensity for those segments inclining towards the red and those towards the yellow, the former required for the formation of violet, and the latter of green. The second impression should give the maximum red for one of the segments, with a diminution of intensity to right and left to form the secondary colours of violet and orange. The third impression would give the maximum yellow for one of the segments, with diminution of intensity to the right and left to form the secondary colours of orange and green.

Whence it results that as soon as the three graduated, monochrome, and transparent impressions have been obtained, it is merely necessary to superpose them in order to reproduce the model in its original colours.

The three results may be obtained in a direct manner by producing at once the three positive monochrome images; but M. Ducos du Hauron prefers to take three negatives, of which one represents the red monochrome, another the blue, and the third the yellow monochrome; and it is with these negatives that he prepares each of the three monochrome impressions, which, by their superposition, yield the various colours.

The *cliches* are obtained with bromide of silver, by a method which the author very carefully describes.

To obtain the monochrome negative of blue, it is necessary that all the simple or compound tints of that colour of the object to be reproduced should be extinguished, and be without effect upon the sensitive film. To effect this, it is necessary to take the *cliche* through an orange-coloured glass, and, after an exposure which will doubtless be a very long one, an image is obtained in which the blue and its compound tints have exerted but a slight action upon the sensitive film, while the red and the yellow have been sufficiently rendered. The *cliche* destined to produce the red monochrome impression is obtained by extinguishing the red rays by means of a green glass. The yellow monochrome is taken through violet glass.

The three *cliches* being obtained, they are employed for the production of the positive impressions. Among other materials for preparing the sensitive film may be employed a mixture of gelatine, bichromate of potash, and water, to which has been added the necessary colouring matter.

The three surfaces of red, blue, and yellow bichromated gelatine being ready, they are printed under their respective *cliches*: that obtained with the violet-blue glass is placed upon the yellow film, and, by subsequent washing, a yellow monochrome print is obtained; the *cliche* obtained by means of the green glass is superposed on the red gelatine; and that resulting from the interposition of orange glass is placed upon the blue gelatinous surface. After exposure, development, and desiccation of the images, the latter are placed one upon another, and yield a polychromic picture, exhibiting the entire series of gradations of tints.

The picture of the spectrum submitted as a specimen by M. Ducos du Hauron is certainly far from being perfect, but it is not the less confirmatory of the preceding statements; and the second specimen, which is a reproduction of a transparent design, and which was obtained by superposition without the aid of the camera, conveys to the mind a very adequate idea of the original.

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* Read before the French Photographic Society.

PERSPECTIVE AND PHOTOGRAPHY.

BY AN AMATEUR.*

To understand this distortion, we will imagine that a chess-board is the subject, and that it is first drawn upon a flat plate of glass placed parallel to it: a perfect copy will be the result. Now take a glass cylinder, which must be placed upright and touching the centre of the flat glass, and when the painter has placed his eye in the middle of the cylinder, let him draw the chess-board upon it, and afterwards flatten out the cylinder. Comparing the two pictures he will find that the vertical line in the centre of the one last drawn is correct in every respect, being just the same as if it had been drawn upon the flat glass; that the other vertical lines remain vertical, but not in their right places, for they are all brought too near to the centre, the greater their distance from the centre the greater being the displacement; and that of horizontal lines, the one which was on a level with his eye is drawn horizontal and straight, but that all those above it curve downwards, and those below it upwards at one end. And this is exactly the picture that is produced by a revolving camera with a lens whose focal length corresponds with the distance of the eye from the cylinder. From this it results that in a photograph taken with a rectilinear lens and a revolving camera not a single point in the whole picture is rightly placed, with the exception of those which happen to lie exactly in one of two lines, the horizontal and the vertical, which intersect in the centre of the picture.

I shall doubtless be told that the same is true of every picture taken with a single lens; and so it is to a small extent; but unless an angle of more than 40° or 50° is photographed, the distortion of the fixed lens is so small as to be, in general, unimportant; and if the same be true of the revolving camera, yet who would use so inconvenient an instrument for the purpose of including so small an angle? If panoramic photographs have any peculiar beauty, not to be found in similar views taken with the same lens in the ordinary way, that fact furnishes a sufficient reason for the occasional employment of cameras which will produce them; but, to my taste at least, these pictures are in general recommended neither by their beauty nor their truth.

Fig. 7 will give an idea of the amount of displacement of vertical lines by the revolving camera. Let ABC be the section of a portion of a cylinder on which a panoramic picture is to be painted, DD′ the flat glass on which it has been correctly drawn, the painter's eye being in both cases at E, the centre of the cylinder. The points D and D′ will be marked on the cylinder at A and C, and F and F′ at G and H, the angle GEH being 60°, and AEC being 120°. When the cylinder is flattened, it will be found that F and F′ are displaced comparatively little, for G and H will come to *f* and *f′*, but that D and D′ are a very long way from their right places, for A and C will be at *d* and *d′* instead of D and D′.

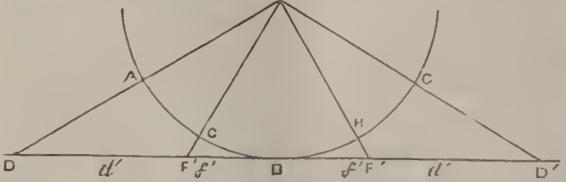

FIG. 7.

Having now, as far as I know, considered all the cases of really or apparently false perspective produced by a horizontal rectilinear lens upon a vertical screen, it remains to consider the cases in which one or the other is inclined.

IV. If the lens is inclined upwards or downwards, while the screen remains vertical, the same effect is produced as if the painter raised or lowered the glass on which he sketched the perspective, without moving his eye. He will alter the position of the horizontal line which is opposite to his eye on the picture, and will thus include more sky or more foreground; but he will in no way alter the size of the picture of any objects on the glass, so that the perspective will be unchanged. The tilting of the lens will make the focussing of the picture easier or more difficult, as the case may be; but with that question we are not now concerned. If the lens is raised by raising the front of the camera, the result will be the same.

V. and VI. If, by means of a swing-back, the screw is tilted upwards or downwards, while the lens remains horizontal, the effect will be the same as the painter would produce by tilting the glass on which he was painting, using as an axis the horizontal line in the centre of the glass. Suppose the lower half of the glass to be brought nearer to his eye; it is obvious that an object on that part of the glass will be drawn smaller, and one on the upper half larger, than if the glass were vertical, and that this distortion will be greater in proportion as the object is further from the fixed horizontal line. If there is a house in the landscape, the distance separating any two angles of the building will be represented greater at the top than at the bottom; or, in other words, upright lines will incline outwards, an effect which corresponds with that in the camera when the focussing-screen is tilted downwards. If, on the other hand, the painter's glass or the focussing-screen are tilted upwards, the contrary effect is produced, and upright lines lean inwards.

If the swing-back is not used, but the camera tilted so that the lens remains perpendicular to the screen, the vertical lines of the landscape will become inclined in the picture, and the horizontal line will also be raised or lowered as the case may be.

What is the effect of raising or lowering the horizontal line? In a landscape that line will often be visible, or, if not, it is generally easy to guess from what level the picture was taken; but in a portrait without any perspective in the background to mark it, such is not the case. Suppose, then, that after a standing portrait has been taken, instead of lowering the camera till the lens is on a level with the face of the model, it is merely tilted downwards till the head is in the centre of the plate, the resulting portrait will be more or less deformed; it will be looked at as if it had been taken from the same level as the eye of the spectator, and the back of the head will appear raised so as to show some of the top of the head. The thighs, not being as much foreshortened as they ought to be for the position in which they are supposed to be seen, will seem to be of unusual length, and the whole body will be out of drawing.

I have omitted to consider the proper distance that the camera should be placed from the model. I suppose that the difference of distance of the nearest and the most remote points of a seated figure from the lens would never be less than from two feet to two feet six inches. If, then, the distance of the face were about sixteen feet, the nearest point would still be magnified at least one-eighth in comparison with the other, a difference which, I suppose, is amply sufficient to give a proper perspective effect. I think, therefore, that all portraits should be taken from about that distance, and that a suitable lens should be chosen according to the size of portrait that is desired. If there is no lens at hand whose focal length is sufficiently great for the size required, a smaller picture must first be taken, and it must afterwards be enlarged.

I have now, I think, shown that none of the distortion none of the false perspective, we so often see in photographs is due to the rectilinear lens with which they were taken, but that they are chargeable exclusively upon the photographer; that if a painter exhibited similar unskilfulness, and made the same mistakes, and if he at the same time painted conscientiously what he saw, his pictures would exhibit just the same distortion; but as he has a resource which is denied to the photographer, that of painting things as he *does not* see them, he thus eludes the difficulty.

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* Continued from p. 307.

If, as I believe, the principles I have laid down in this paper really govern the perspective of photography, they will assist anyone, whose pictures are not satisfactory in that respect, in correcting them; if, on the other hand, I have fallen into any material error, those who observe it will, I hope, take the trouble of putting me right; and if, as is still more probable, I have overlooked any important principles, I hope that some one will come forward, and publish, for the benefit of myself and others, the information he possesses.

Fear of occupying too much space in these columns has induced me to condense my remarks, sometimes, perhaps, at the expense of perspicuity; if so, and if I have occasionally become unintelligible to any of the readers of this Journal, I shall be only too glad to explain myself more fully, if I am called upon to do so.

In my former communication on this subject, at page 30 of the present volume, in the first column, and line 29 from the bottom, the word *thrice* has been misprinted for *twice*.

Brighton, June 5th, 1869.

MODES OF INTENSIFYING.

BY PROFESSOR J. TOWLER, M.D.*

There are several methods of intensification, all of them more or less reliable; and these methods may be reduced to two classes. The first class contains all those chemical compositions which, when applied to the developed picture, undergo decomposition, and produce a deposit of pure silver, or mixture of pure silver with an organic compound of this metal, upon the weak shades and middle tones of the picture. The second class simply produces a decomposition, and changes the pure silver or the organic salt of silver in the shades into other forms and colours, which, though equally transparent to common light, is less so to the blue side of the spectrum which effects the photographic image. A third class of intensifiers might be enumerated, as emanating from the combination of the two preceding classes; the property or characteristic of this third class is to produce a deposit or aggregation of silver or of silver salt, as well as a change of colour in the deposit.

It is not our intention to give all the processes of intensification at present known, but simply to present those which we have found, in practice, reliable.

Intensification with Nitrate of Silver.

This method or process is decidedly the simplest and most allied to development; it is, in fact, a mere continuation of the development, especially when performed on the negative before it is fixed. Now, it is not a matter of indifference whether the negative be intensified before fixing or afterwards, and the mode of determining this point is the following: If the high lights in the negative are still quite transparent, and the middle tones as yet but imperfectly brought out, it is in some degree possible to develop more shade in both these parts by applying the intensifier as soon as the negative is washed, but not fixed. This certainly can be effected if light itself has already done its duty, for it frequently happens that the developer fails to effect any more change in the film, and the development, therefore, stops short, simply because there is no more silver solution in the developer to be decomposed; for you must know that the iron salt does nothing more in the process of development than decompose the solution of nitrate of silver into pure silver, and the metalloids in combination with it; and when the silver is thus liberated in the state of the finest powder, it is attracted by the physical and undeveloped picture wherever there are any shades to be filled up. If this be the case, the further addition of a solution of nitrate of silver to the developer will cause the development to continue, and to continue so long as there is a silver solution to be decomposed, or an iron salt to decompose it. In practice we have two methods of continuing the development, or of intensifying by this process.

First Method.

Wash the film thoroughly after the picture has been developed as far as it can be, and then pour upon it a sufficient quantity of the following solution to cover it completely, and allow the solution to drain off again into the vial.

Nitrate of silver	30 grains
Distilled, or rain water	2 ounces
Nitric acid	2 minims

The solution is kept in stock for use.

The developer is now poured upon the plate, when it will be found that the shades soon begin to thicken, and new shades begin to appear in parts where before the film was quite transparent. In this way you can make the negative as intense as you like, but great caution is required in not continuing the operation too long, otherwise the opacity of the shades will be too great, and the resulting picture will be quite bleached in the lights, and devoid of all middle tone. There is always danger of producing a granular deposit on the shades by this method, unless the silver solution be dilute, or the plate be previously well drained. The addition of the few drops of nitric acid tends to prevent the granulation by controlling the rapidity of action; and, where this tendency exists to a great extent, more acid can be added to the silver solution than that given in the formula.

Second Method.

The second method of intensifying is simpler than the preceding, for it is not necessary to wash the film before the intensifier is poured upon it. Drain off all excess of the developer which has already done all that it can effect; then, to a proper quantity of fresh developer in a perfectly clean vial, add two drops of the acid silver solution for each drachm of the developer, shake the mixture quickly, and then pour it upon the drained film. As before, the shades will gradually become more intense, and even new shades will appear, if the previous development had been imperfect. By proper management, both these methods are quite reliable, and are, at the same time, most reasonable and legitimate modes of intensification, being, as I have already remarked, merely a sort of continuation of the development; and the negatives, by these processes of intensification, are clean and neat, the shades being composed of a pearly-grey deposit of pure silver.

If, on examination of the developed plate in the first instance, it appears that the development is complete, no intensification is necessary. In this case, the plate is washed and fixed. But in many instances you will find, until your experience is complete, that, after fixation, the opacity of the shades is not as great as you would like, although, in other respects, the negative is very good and respectable. After fixation, it is impossible to bring out any more detail, but you can very easily increase the opacity of the shades, and thereby make a better printing negative. In order to effect this required intensity, you can proceed by either of the two methods just given, or by those which follow.

Intensification with Sulphide of Potassium.

Dissolve a lump of sulphide of potassium (liver of sulphide), of the size of an ordinary horse-chestnut, in a pint of rain-water, and keep it well corked for future use. As soon as the plate has been developed, washed, and fixed, pour a sufficient quantity of the sulphur solution upon the film, and keep it in motion, so as to equalize its action. The colour of the shades soon changes from the pearly-grey of pure silver to the inky black of sulphide of silver. The negative looks much more intense after a while than it did before the intensifier was applied; but the looks are very deceptive, judging, as you will be apt to do, from the mere change of colour. Nevertheless, the shades really become more opaque by this application, and good negatives can be easily and effectually prepared by this process of intensification. It has been long supposed that the picture, being intensified by a sulphur compound, would not be permanent; that is, would not resist the changes of time and of the atmosphere. This idea is pretty much exploded, from the fact that a negative so intensified is as firmly protected against the ravages of time and the atmosphere as a negative intensified by any other process. The only objection to this process is the unpleasant odor arising from the alkaline sulphide employed in the intensification. The sulphide of sodium, of barium, or of ammonium may be used with the same efficacy as that of potassium. Whichever is used, you must be careful to keep it well corked up; otherwise, it undergoes decomposition, and a carbonate or sulphate of the respective base is formed.

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* Condensed from the *Philadelphia Photographer*.

Correspondence.

CRAYON-LIKE EFFECTS IN PHOTOGRAPHS.

Sir,—With reference to "Enquirer's" letter in the News of the 25th ult., allow me to set his mind at rest regarding the patent right of Napoleon Sarony to produce crayon-like effects in portraits. In the first place, I find that on the 5th April, 1864, Mr. Napoleon Sarony took out provisional protection only for improvements in photography. It reads as follows:—

> My invention has for its object the production of "cartes-de-visite," or other photographs, similar in appearance to crayon drawings, ordinarily known as Richmond drawings, and crayon heads. I effect this by a double process of vignetting direct within the camera. Firstly, I produce the bust of a person sitting, or other object required, vignetting that portion only that is seen in the finished picture by the use of a properly graduated glass suspended within the non-focal rays of the posterior of the lens, thus protecting certain portions of the sensitive plate from the action of the light; secondly, I place before such portion of the said plate as has already been acted upon by the light, an inverted or reverse vignetting glass, in such a manner as to secure the said part from any further action of the light, whilst that portion of the plate previously unacted upon is now brought into the focus of a drawing which is placed before the lens, and which represents the aforenamed Richmond or scroll drawing, the result being a scroll vignette or photograph. The same effect may also be obtained by the process known as "double printing."

I also find that on the 9th of June, 1864, Letters Patent was granted to Napoleon Sarony "For Improvements in the Production and Treatment of Photographs." It reads as follows:—

> This invention consists of improved modes of imparting to photographs the appearance of drawings or engravings. This I effect by printing upon the photograph a background or foreground in sketchy touches, lines, or tints, such as artists finish their crayon or other drawings with, or as engravers produce their tint; and for this printing I employ photography, lithography, copperplate, wood engraving, or any other suitable method; or, by another mode, I print the touches, lines, or tint, upon the paper upon which the photograph is to be taken, leaving the space for the portrait or picture, which may be subsequently produced upon it.
>
> In producing this effect by means of photographic printing, I first proceed to obtain the negative picture of the sitter or other subject in vignette in the ordinary well-known manner, and I then take a second negative upon glass. This second negative consists merely of the hatching or sketchy lines photographed upon the glass from a chalk, pencil, or other drawing of such lines. I then take my picture in vignette, and afterwards, by means of the second or etching negative, photograph the lines upon the picture, the light being prevented from acting upon the face of the portrait, or upon any desired part of the picture, and developing the lines only, by blocking out such parts as should not have the lines at the back of the vignetting glass; or, by another process, I can produce the effect of etched vignettes by etching the lines by acid upon the usual vignetting glass, employing, if necessary, thin varnish or any other suitable medium as a coating for the etching lines, and to produce half-tints, if the crude lines should print too darkly; or I can coat the vignetting glass with Japan varnish, then scratch the etching lines through the varnish, and produce the half-tint, as above described, by coating the lines with thin varnish or any other suitable material. To produce the same effect by other modes of printing—such as lithography, copperplate, or wood engraving—I merely print the lines from the stone, plate, or block upon the paper upon which the photographic picture is to be taken, or after it has been taken.
>
> Having thus described the nature of my said invention, and the manner in which the same is to be performed, I claim, without limiting myself to these precise details, the improvements in the production and treatment of photographic portraits or pictures, in imparting to them the appearance of drawings or engravings, by the means and in manner herein more fully set forth and specified.

On the first invention I need scarcely make any remarks, seeing that the second patent embodies nearly all that is represented as novel in the first; suffice it to say, that the idea to work out is tedious, uncertain, and almost impracticable. In the second patent Mr. Sarony states (what, to me, is remarkably clear), "I first proceed to obtain the negative picture of the sitter or other subject in vignette in the ordinary well-known manner, and I then take a second negative upon glass, from a chalk, pencil, or other drawing of such lines; I then take my picture in vignette, and afterwards, by means of the second or etching negative, photograph the lines upon the picture, the light being prevented from acting upon the face of the portrait," &c.

This is only a simple method of double printing on paper. Nothing is stated in the specification that glass transparencies with crayon-like lines can be taken by this method, and a little reflection will show that by this method it is quite impracticable, inasmuch as the negative containing the lines must be dense or opaque, that the light should not penetrate through and destroy the picture already printed on the paper. Now, in my case, I print through the portrait and the glass containing the crayon-like hatching by one operation, and with a better effect than is produced in the O. Sarony picture, simply because, in the O. Sarony picture, the lines show beyond the margin of the photograph, and, in some instances, the photograph shows beyond the crayon lines. In my pictures it is quite impossible that the lines can be visible where there is no photograph. What would be the result of "coating a vignette glass with Japan varnish, and etching lines thereon?" Putting said glass against the negative, and taking a transparency from them? Answer: The result would be nothing but a series of lines varying in densities according to the amount of light allowed to pass through the etchings. I think that the readers of the specifications of Napoleon Sarony must come to the conclusion that if any patent for producing such effects is valid, then Oliver Sarony has infringed the patent of Napoleon Sarony.

Apologising for troubling you with so long a communication,—I remain, yours truly, A. L. Henderson.

GELATINE IN THE PRINTING BATH.

Dear Sir,—Permit me to call your attention to chapter No. 2 of Mr. Bovey's "Dodges," &c., in last issue of Photographic News. In it he says, in using gelatine in the printing bath, "my readers will doubtless remember that in the Year-Book of 1866 I contributed a paper on the employment of gelatine in the printing bath." This is true, but he had not then the fairness to say where he got his idea from, and would now infer that the idea of its use sprung from himself. This is not so, as you are aware, for in the same Year-Book you speak of improvements in printing, and give the fact, which is true, that it was myself who first made it known, having used it for years before. You also gave a leader on it. Mr. Cherrill, Mr. Cooper, and others tried it, and spoke in its favour, and I have had letters of thanks from Antwerp, and other places, for making it known.

I am very proud of my friend "gelatine," and am very happy to be closely associated with it; but my experience with gelatine has not been otherwise than pleasurable, and I have not had trouble with it.

You will please forgive me for so long a letter on what may seem to others a trivial matter, but if you esteem a "friend" you ought to stick to him through evil as well as good report.—I am, dear sir, yours respectfully,

John E. Palmer.

58, *Union Street, Stonehouse, June 29th*, 1869.

[Mr. Palmer shows an unnecessary sensitiveness on this subject. His claim to the first publication of the use of gelatine in the printing bath was fully discussed and fully maintained in these pages. We justified his claim against some who doubted it. Mr. Bovey was one of the first experimentalists with it, one of the earliest to publish his results. He then (October 27th, 1865) very frankly accredited Mr. Palmer with the idea. Having both experimented and written on the subject since, he has scarcely felt it necessary in each mention of the matter to couple Mr. Palmer's name with it. When any one is writing on the use of collodion he does not dream that it is necessary to mention that the collodion process was introduced by Mr. Archer.—Ed.]

SPLITTING OF THE FILM IN GUM PLATES.

Sir,—Lately, during some trials with the gum-gallic dry process (Gordon's), I have found the films after the final washing split during drying; this seems to be the case when the plates are put in an airy place to dry. I think the film must have been weakened by prolonged development, as this accident has usually happened when the exposure has been insufficient.

Last week two plates, which had been prepared more than a month, were exposed and developed. I could not get the details out with the gelatine developer, so bad recourse to a somewhat empirical remedy—saturated solution of protosulphate of iron, with a drop or two of 30-grain solution of nitrate of silver; this, with a little pyro intensifier, soon gave me a good printing negative. The first plate being placed out-of-doors to dry, the film split downwards from the centre, leaving the sky almost intact. The second I kept in the dark room; this also, when nearly dry, began to split at the corners. I varnished this as soon as possible, and so saved it. A print without any attempt at touching-up I enclose.

I notice, as somewhat peculiar, the rapid surface-drying of the films in this process. What is the cause? The film I always secure, prior to developing, with shellac varnish, and am very particular not to touch the edges of the plate at all during development. I use a thin flat piece of wood, with a cross-piece having a notch cut so as to receive a corner of the plate not covered with collodion. The collodion I use is Huggon's old, 1 part, Mawson's 2 parts.—Yours very faithfully,

J. C. S.

June 28, 1869.

[Can any of our readers afford any information on the question of splitting films as occurring in gum plates? Prolonged development, of course, weakens a film, for it must be remembered that nitric acid and sulphuric acid are liberated in the decomposition of nitrate of silver and sulphate of iron, and that these acids act readily on the film.—Ed.]

OPAL PRINTS ON PLAIN GLASS.

Dear Sir,—With reference to your remarks about using other pigments instead of kaolin in collodio-chloride, I wish to observe that I have tried nearly everything, and have always fallen back upon kaolin as the best substance for the purpose. It is held better in suspension, and produces a more creamy film than anything else I have experimented with.—Yours truly,

C. Durand.

11, *Great Coram Street, June 30th*, 1869.

MR DAVIES' FRENCH POLISH PROCESS.

Dear Sir,—The fact of being enabled by any good method to print upon paper and other substances would be so very useful, that I hailed the formula of W. H. Davies, published in your very useful paper, June 11th, with great delight. I at once tried it very carefully, but upon mixing the shellac solution with the gelatine a substance like sponge was formed, and no appearance of the creamy emulsion desired. Thinking I may have gone wrong somehow, I went over again very carefully, but the result was just the same. Could you help me in the matter? If so, I should be very much obliged and benefitted. I tried to print upon paper prepared with my solution (after sensitizing, of course), but the result was just the same as presented upon paper without being treated with the solution.

Apologizing for troubling you, I beg to remain yours,

Dublin, June 21st, 1869. Cast Down.

[Will Mr. Davies, or any of our correspondents who have had experience, kindly give our present correspondent any hints as to escaping the difficulty he describes?—Ed.]

Talk in the Studio.

Exhibition in Devonport.—We find, from an advertisement of an Exhibition of Arts, Science, and Manufactures to be held in Devonport, in August next, that according to the list of prizes offered, photography will be included. For the six best untouched photographs, landscape or still life, a silver medal will be awarded. Mr. W. Mogg, and Mr S. Chappel, Secretaries, Devonport, will afford further information.

Time-saving Facilities for Field Work.—A correspondent mentions a plan he adopts to avoid delays in the field and secure as many good negatives as possible whilst the light is suitable. He says: "It consists in having a double water-tight bath; I mean a case containing two baths, or one made double, with a partition in the centre. The purpose would be to have silver in both baths, and thus be able to sensitize two plates at once. Then, having two dark slides, or a double one, the photographer could leave his dark tent with his two plates at once, and take two different sizes of his subject with a great saving of time. I am surprised that manufacturers of glass baths have not made these with a central partition, thus forming two baths in one."

The Green Colour of Leaves.—The green colour of leaves, one element of which must be a vegetable blue, has led an American experimentalist to the conclusion that leaves turn red at the end of the season through the action of an acid, and that the green colour could be restored by the action of an alkali. The conclusion has been verified, the *Athenæum* declares, by experiment. Autumnal leaves placed under a receiver with vapour of ammonia in nearly every instance lost the red colour and renewed their green. In some—such as the sassafras, blackberry, and maple—the change was rapid, and could be watched by the eye, while others—particularly certain oaks—turned gradually brown, without showing any appearance of green.

Important Patent Decision.—The Lord Chancellor has recently decided a point of interest to the registrars of patents. An intending patentee had lodged a provisional specification, when another inventor filed one of a similar description, and procured his patent to be the first sealed. The former complained of this, and argued that under the circumstances the Attorney-General should not have allowed the second person to file his patent. The Lord Chancellor, however, pointed out that there was no law to compel a person who had filed a provisional specification to proceed with his invention; and if the applications of other parties were to be uniformly rejected, the country might be deprived of the fruits of the ingenuity of many minds which were working in the same direction.

To Correspondents.

Edward Fisher.—A glass house of the size and proportions you describe will undoubtedly answer very well for portraits; but it is more circumscribed than we should have advised if circumstances had not restricted the size. The chief difficulty will be felt if you have occasion to take groups. In such case you require greater length, in order to get back far enough. For standing card figures, and especially for groups, we prefer a card lens of not less than 8 inches focus; and with such a lens you require a room of at least from 24 to 26 feet in length. However, by using a good lens of short focus you may get very good results in such a studio as you describe. The arrangement and division of the space into window and opaque portions will do very well. If possible, we should make the panes more than a foot wide, as a multiplicity of sash-bars will cut off much light. You will require thin white blinds to protect the sitter from the direct rays of the sun at certain times. The obstruction of the building you name will not prove troublesome. There is no work on the subject of glass rooms and lighting. The fullest published information on such subjects is contained in our various volumes and Year-Books. We are glad you find our pages so useful to you.

One who Tries.—The defect you describe as following from the use of iron for intensifying partakes of the nature of fog, and is either the result of insufficient acid, too much silver, or a little diffused white light in your dark room. The piece of a print enclosed shows that the negative is considerably under-exposed; and when an under-exposed plate is pushed in intensifying, especially with iron and too little acid, fog in the shadows is apt to result. Give longer exposure, and use more acid in the intensifying. You do not state which intensifying solution you employ. The presence of gelatine is useful in preventing fog. Applying a solution of iodine between developing and intensifying, as we have before instructed, is a preventive of fog. 2. By a "spongy" negative, do you mean one in which the film shows fine reticulation? If so, that chiefly arises from the collodion being made with too weak solvents.

R. R. (New Brunswick).—The letters were duly addressed and forwarded. We are glad the News is so appreciated across the Atlantic.

W. C.—The spots on the print sent are most perplexing. You appear to have taken all the precautions which should prevent their appearance, and the time of their appearance forbids the supposition that they arise from any of the known and preventible causes. The only probability to which we can attribute such spots, after removal of the causes you name, is the existence of metallic particles in the paper. As they appear when the prints have been in the hypo ten minutes, try removing the prints at the expiration of nine minutes, which time ought to be sufficient to fix prints on thin paper in strong hypo. Is there any possibility of particles of chloride of lime alighting on the prints at any time?

A. B.—From the appearance of the piece of paper enclosed we should conclude that two or three causes were in operation to prevent perfect success. In the first place, the collodion is much too thin. Different samples of pyroxyline require to be used in different proportions, and such a sample as that you have used will require about twelve grains to the ounce instead of six, in order to secure a satisfactory layer of the sensitive salt. The process of thickening the collodion alone will effect an improvement. In the next place, there is evidently too great an excess of free nitrate of silver, and whilst excess of free nitrate is necessary to give vigour, great excess impairs sensitiveness. To effect an improvement in the sample of collodio-chloride by which the paper sent to us was prepared we should add 6 grains more of pyroxyline to each ounce, and then try. If the result were still insensitive, add a trace more of the chloride solution, and if wanting in vigour, a little more citric acid. As in all other operations in photography, slight modifications are occasionally required to meet special circumstances. We have never met with a case of precipitation of the chloride in a very short time after mixing, but we have heard of several. The only probable reason we can suggest is too precipitate mixing, and the collodion being too thin. We always mix by adding a few drops at a time and shaking between, and always add the chloride solution to the nitrated collodion, and not *vice versa*. We have not entered into any extended experiments for securing keeping qualities in collodio-chloride paper, but have frequently kept it a few days, and sometimes weeks, without change. We have found keeping qualities to depend on the use of a paper into which the preparation did not in any degree permeate, and on the presence of a minimum proportion of free nitrate, the presence of citrate of silver being especially necessary, in such case, to secure vigour. Herr Obernetter uses a "porcelain" paper coated with a pigment, and with a final coating of gutta-percha. When the collodion is thin, and there is much free nitrate present, the paper is easily permeated with nitrate solution, which, coming into contact with the sizing matter of the paper, produces a compound which soon discolours. It is worth observing that, notwithstanding the brownness and want of depth of the scrap of paper sent, it soon acquired a deep black in the toning bath. 2. We published the specification of Herr Albert's French patent a short time ago; but whether it fully described the process we cannot at present say. It is analogous to photo-lithography, but a gelatine film, instead of a stone is used. It is unquestionably very important and singularly successful. We have just received a large parcel of prints, varying from card size up to 30 inches long, all admirably perfect. Card duly received. Thanks.

N. S.—It is a somewhat difficult thing to suggest a probable contamination in your silver; a trace of iron or gallic acid in the water would simply reduce the nitrate to metallic silver, and would not have a tendency to produce insensitiveness. In making the remark that the nitrate of silver obtained is insensitive to light you are scarcely sufficiently specific. Pure nitrate of silver should be insensitive to light. Do you mean that ordinary albuminized paper floated on a solution of the nitrate you produced is insensitive? There is often a black precipitate obtained in preparing nitrate of silver, but it is generally metallic gold. Try fusing the crystals of nitrate. This should give you the most pure salt, capable of yielding the greatest sensitiveness. 2. The plan adopted by Mr. England for converting gold residues into chloride answers well. Throw down the gold with sulphate of iron in the usual way, and boil the precipitate for a quarter of an hour with nitric acid to remove all traces of silver. Then wash the gold, which is in the form of a purple powder, and convert it into chloride by means of nitro-hydrochloric acid in the usual manner.

J. S. (Aberdeen).—We answered the letter by post, but, being from home, we fear that some delay, which we did not intend, occurred in its despatch.

C. B.—In any case where a person sits to you at your request and for your purpose, the copyright of the portrait is yours, and may be duly registered as your property. The only doubt can arise in cases where the sitter has ordered the portrait for himself, and duly paid for it.

L. F.—Mr. Gordon, as we have before stated, first tried the alkaline developing process with his gum-gallic plates, and subsequently abandoned it for the iron solution, which gives better results.

Several Correspondents in our next.

Photographs Registered

Mr. J. Collings, Cardiff,
Portrait of J. Boyle, Esq.

Mr. W. Emmett, Staleybridge,
Two Portraits of Rev. W. W. Hoare, B D.

Mr. McLeod, Newark,
Photograph of Bishop of Lincoln.
Two Photographs of Lincoln Minster.

Mr. W. T. Hulland, Tamworth,
Two Photographs of F. Ruffe, Esq.
Three Photographs of Rev. J. O. Millar.

Mr. G. Wardley, Manchester,
Three Photographs of Conway Castle.
Two Photographs of River at Conway.
Photograph of Manchester Town Hall.
Photograph of the Monarch Oak at Pandy
Photograph of the Miller's Cottage at Pandy.
Photograph of the Vale of Bedgellert, &c.

Mr. Appleyard, Brighouse, York,
Two Photographs of St. Martin's Church, Brighouse

Mr. J. Stuart, Glasgow,
Two Photographs from Oil Painting, "View of Helensburgh."

Mr. S. Kirk, Nottingham.
Photograph of Sir R. Clifton's Bed-room, Clifton Hall.
Photograph of the Red Room, Clifton Hall.

Mr. J. Barber, Bidford,
Photograph of Rev. F. W. Davenport.

Mr. P. Jennings, Belfast,
Photograph of Speaker's Chair, Irish House of Commons.

THE PHOTOGRAPHIC NEWS.

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TRANSFERRED PRINTS.

The advantages which attend any method of transferring a print from the surface on which it was produced to some other are manifest and manifold. Besides all the conveniences of being able, for ornamental purposes, to place a print on some surface which could not have been conveniently manipulated in the ordinary modes of printing, there are various other points of importance gained. The print itself has a much higher chance of permanency if the thin film, of collodion or other substance, holding the image, can be removed from the resting place on which it was produced, so that the hypo saturated paper, so difficult to wash perfectly, may be discarded, instead of forming a portion of the print in its finished state. Again, if it be desired that the image should be on wood, ivory, &c., there is always great risk in submitting such substances to the action of various solutions, and finally of much washing; and if a satisfactory completed image can be transferred to such surfaces by any method, much is gained in every way, both as regards convenience, beauty, and permanency.

There are various modes of effecting such transfers, and we this week add to the list of existing methods a new one. In another column Mr. Charles Durand describes a simple, neat, and efficient mode of transferring collodio-chloride prints to various surfaces. The idea has probably been derived from Mr. Swan's method of working the carbon process, to the manipulations in which this method bears some degree of analogy.

The method in question is very simple, and, we find, on testing it, very efficient. A piece of smooth stout paper is coated with india-rubber varnish made by dissolving pure india-rubber in benzole in the ratio of about ten grains to the ounce. We have used the india-rubber solution used by Mr. Swan in his carbon process. This varnished paper is coated with a good sample of collodio-chloride of silver, and then printed, toned, fixed, and washed in the usual manner. It is then brought into contact, face downwards, with a card or other surface which has been treated with a little gelatine, and care taken to remove air-bubbles, and left to dry; after which a little benzole applied to the varnished paper softens the india-rubber, and permits the paper to be removed, leaving the image firmly attached to its final resting-place. The purpose to which Mr. Durand has chiefly appplied this method is the production of cards with a film of collodio-chloride slightly bedded in the mounting-card to which it is transferred, producing a very pleasing effect. But it is manifest that other useful applications can be easily made. The transfer of the film to ivory is one desirable use of the process, inasmuch as any process in which the ivory comes into contact with either silver solutions or hyposulphite of soda, it is desirable, if possible, to avoid. We have not yet tried the transfer to ivory by this method, but we have attempted the transfer to a tablet of white *papier mache* with sufficient success to satisfy us that the transfer to ivory would be in every way simple and efficient.

PHOTOGRAPHIC TEST IN CASES OF REAL AND APPARENT DEATH.

To be buried alive is probably the most terrible, the most agonizing fate which any human being could dread; and yet, according to the statistics of Dr Londe, a French physician, it is a fate which occurs *every day* to some one. Apparent death in the midst of actual life, it seems, is of very much more constant occurrence than it is easy to believe. And, what is worse, the actual and unmistakable signs of death are by no means so well marked as to leave no room for doubt in non-professional minds. The existence or non-existence of the *rigor mortis* or cadaverous stiffness is not always appreciable to unskilled persons, and various other tests are uncertain or inconvenient to apply. In this dilemma it is proposed to make photography available. M. de Parville has suggested a means of securing a photographic record of trustworthy indications in a manner similar to that by which the magnetic perturbations of the globe are made to write their own history at the Royal Observatory at Greenwich.

In an article on the subject in *All the Year Round* the proposed method is described, with less precision, however, than we could have desired. After speaking of the great need of some trustworthy test, it proceeds:—

"M. de Parville now announces the possibility of [supplying?] this great desideratum. He professes to place in anyone's hands a self-acting apparatus, which would declare, not only whether the death be real, but *would leave in the hands of the experimenter a written proof of the reality of the death.* The scheme is this: It is well known that atrophine—the active principle of belladonna—possesses the property of considerably dilating the pupil of the eye. Oculists constantly make use of it when they want to perform an operation, or to examine the interior of the eye. Now M. le Docteur Bouchut has shown that atrophine has no action on the pupil when death is real. In a state of lethargy, the pupil, under the influence of a few drops of atrophine, dilates in the course of a few minutes; the dilatation also takes place a few instants after death; but it ceases absolutely in a quarter of an hour, or half an hour at the very longest; consequently, the enlargement of the pupil is a certain sign that death is only apparent.

"This premised, imagine a little camera-obscura, scarcely so big as an opera-glass, containing a slip of photographic paper, which is kept unrolling for five-and-twenty or thirty minutes by means of clock-work. This apparatus, placed a short distance in front of the dead person's eye, will depict on the paper the pupil of the eye, which will have been previously moistened with a few drops of atrophine. It is evident that, as the paper slides before the eye of the corpse, if the pupil dilate, its photographic image will be dilated; if, on the contrary, it remains unchanged, the image will retain its original size. An inspection of the paper then enables the experimenter to read upon it whether the death is real or apparent only. This sort of declaration can be handed to the civil officer, who will give a permit to bury, in return.

"By this simple method a hasty or careless certificate of death becomes impossible. The instrument applies the test, and counts the minutes. The doctor and the civil officer are relieved from further responsibility. The paper gives evidence that the verification has actually and carefully been made; for, suppose that half an hour is required to produce a test that can be relied on, the length of the strip of paper unrolled marks the time during which the experiment has been continued. An apparatus of the kind might be placed in the hands of the minister or one of the notables of every parish. Such a system would silence the apprehensions of the most timid. Fears—natural enough—would disappear, and the world would be shocked by no fresh cases of premature burial."

The want of precision of which we complained just now consists in the absence of any explanation of the adequacy of the means to the end proposed. The ordinary light of day falling upon the pupil of the human eye would be altogether insufficient to yield even a latent and developable image in a camera which would impress itself on any kind of sensitive paper which we know. Some means of securing intense illumination of the eye—a rapid lens, and a paper or dry collodion film—might be made available to secure such a continuous record. Or, in the absence of these facilities, a wet collodion plate made to pass steadily and slowly behind the lens would doubtless give a satisfactory record, even with ordinary daylight illumination. Photography doubtless presents facilities for securing such a record, but it becomes important that an ingenious suggestion should not be rendered unavailable by its connection with means technically inefficient for the purpose proposed.

* * *

"THIEVES AND RECEIVERS AMONGST PHOTOGRAPHERS."

We have received a communication, in reference to an article with the above heading which appeared in our pages on the 9th of April last, calling our attention to the fact that in the allusions to Mr. Smith, photographer, of New Street, Covent Garden, his guilt was regarded as a foregone conclusion, whereas, in fact, when the case came on for trial at the Middlesex Sessions, Mr. Ribton, the counsel for the prosecution, withdrew from the case against Mr. Smith, who was thereupon acquitted; and that in the statement containing an implication of his guilt an injury was done to a man whom the jury declared innocent.

It is scarcely necessary for us to say that in the article in question we had no personal feeling or concern of any kind. The names of the persons charged were to us simply the names of persons of whom we had no knowledge whatever. We simply published the communication of one of our contributors, who was present in court when the charge was made, and who assured us that all the statements contained in his communication were made in open court. No one would more deeply regret than ourselves that any statements made in our pages should injuriously affect innocent persons. Of Mr. Smith we of course personally knew nothing whatever, and we recorded, as journalists, that the jury had pronounced him not guilty, precisely as we had recorded the charge made against him. We have since been assured of his respectability, and it has been pointed out that emphatic prominence ought to be given to the fact of his acquittal. In justice to him, therefore, we thus prominently repeat the fact we before mentioned in our note of the trial of the case, and we unhesitatingly express our regret if, in giving publicity to statements not established by evidence at the trial, we have done Mr. Smith any injury or caused him any annoyance.

* * *

WHAT IS A PLAIN PHOTOGRAPH?

An amusing discussion appears to have been raised in New Orleans on the question, what is a plain photograph? At the Louisiana State Fair, amongst other prizes one was to be awarded by a committee for "the best plain photograph" The print to which the medal was awarded was untouched, but it was confessedly from a retouched negative. Very naturally, we think, the other competitors protested against this selection. The committee respond as follows:—

"The question left to our consideration was, 'what was intended and meant by *plain* photographs?' and the Committee decided that *plain* photographs are photographs not in oil, photographs not in water colours, photographs not touched with India ink, in short, photographs not touched at all by the hand of man, but simply *printed by the light of the sun.*

"It was therefore decided that the contrivance brought to bear to produce superior prints merited to be looked upon as an improvement in plain photography, and as a new and further step towards advancing a perfection in an art, for the development and encouragement of which the premium seems to have been designed, and in the spirit and furtherance of which it was bestowed."

To this it was replied in a letter, signed by the majority of the photographers in New Orleans, as follows:—

"We, the undersigned photographers, feeling aggrieved at the decision of the Awarding Committee of Class D, for Plain Photographs of the Third Annual State Fair of Louisiana, do respectfully ask for a rehearing for the following reason:—

"We do most positively assert that in our judgment a print from a *retouched negative* is not what is understood in photography as plain work. Nevertheless, the Awarding Committee has awarded the first premiums for plain photographs to photographs made from retouched negatives. Under these circumstances, therefore, we feel that great injustice has been done, and a precedent established which is wrong and unjust."

The immediate question involved, of course, only concerns the local competitors; but the subject itself is not generally uninteresting, and the question might arise at any time as affecting photographers generally. So far as our judgment is concerned, there cannot be a doubt, we think, that a print from a touched negative is not a plain photograph in the ordinary acceptation of the word. It is undoubtedly modified by man's manipulation. It may be improved; it may be spoiled; but it is not the simple work of light, lenses, and chemicals, and should not be suffered to compete as such. We have not heard the decision in the case in question; but there cannot be much doubt as to the issue after due consideration.

* * *

WET PROCESS IN THE FIELD WITHOUT A TENT.

The attention obtained recently by methods of working the wet process in the field without a tent has caused many enquiries for further details of Mr. Barrett's apparatus, to which we have made repeated allusion. As the numbers and the volumes containing the details are out of print, and many of our present readers have no means of access to our First Volume, we have been induced to reprint Mr. Barrett's original description, which is as follows:—

The apparatus is all contained in a case 12 inches high, 12 long, and 7 broad, to be made of the black glazed cloth used for umbrella cases, with two buckle straps round it, through which another strap may be passed to carry over the shoulder, or a piece of wood by way of handle, to carry by hand. The case must have a foundation of thin wood. Pack inside this two cases made of the same material. Let it also contain the brass ring for the tripod-stand, two gutta-percha bottles—one for water, and the other, a small one, to contain a saturated solution of hypo—also a small strap to carry the bath box (when moving only a short distance), and one or two cloths. No. 1 of the last-mentioned cases is 11 inches high, 4¾ long, 7 broad, and contains:—1. The camera; 2. Plate-box (in the camera); 3. Shutter to slide into the back of the camera after the object is focussed (fig. 1); 4. The focussing-glass in a frame, set in the centre of a piece of wood which is exactly the width of the cell on the top of the camera; 5. A piece of wood shaped as 5 in fig. 1, with two pegs to fit into holes at the bottom of the camera, serving as a stop to keep the centre of the plates and of the focussing-glass in the centre of the lenses. It must be covered with a piece of thick bibulous paper wrapped round it, or the plate will be stained by touching it; 6. A thin piece of wood that slides into grooves, cut from the back to the front of the camera, in the centre of the top and bottom, to separate the lenses. Care must be taken that the groove into which the back shutter falls is deeper than this groove, or the light would pass through it. To pack the plate-box in the camera this thin piece of wood (6) and the piece (5) take out.

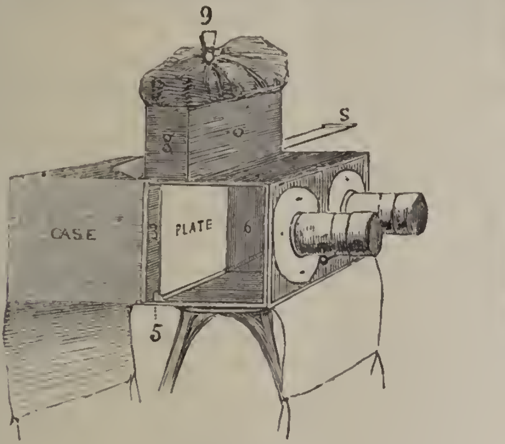

Fig. 1.

No. 2 case is 11 inches high, 5 long, 7 broad. It contains:—7. Box containing the baths; 8. Dark chamber; 9. American clip, which must have a strong piece of india-rubber round it to make it clip tightly. Both lenses may also be packed in this case, or one may be carried separately to make it lighter. The lenses are double combination, and stops for them of different diameters may be carried in a small pocket at the side of No. 1 case. Two small pockets in this (No. 2) case contain a small bottle of collodion, and separate pieces of cloth to wipe the tops of the baths if found wet on removing the covers. Figure 1. The camera (section). It is not to be taken out of No. 1 case when in use, the portion beyond the back serving to screen the light in focussing. It is drawn in the figure as in use. It is 5¾ inches long, 4½ high, 6¾ wide (outside measure), made of ¼-inch mahogany. A cell must be cut out at the top of the camera across the width for the projecting piece (*b*) of the dark chamber to fit into; it should be 5⅞ inches long and ⅞ wide, and the centre of it 4¼ inches from the front of the camera; the raised back of the piece of wood (5) should come exactly under the centre of it. The camera is open at the back, that the plate-box may pack inside it; one-half of the front must be made to slide in after its lens is screwed into it. My lenses are three inches apart from centre to centre. The plate-box is 8½ inches high with the lid. The grooves for the plates must not come beyond 3 inches of the top of the box, that the wet collodion end of the plates when put in may be above the grooves, and not be rubbed at the edges; it is made to contain twelve plates (patent plate), and must fit inside the camera. The plates are 7¾ inches long by 5⅜ wide, and must be scratched across 3 inches from each end, to prevent the collodion slipping. The box for the baths (fig. 2) is 6¼ inches high without the lid, 7¼ by 4¾, the lid to fasten with hooks. It has two pieces cut out at the bottom, *a b*, exactly the size of the baths, and a false bottom inside, which, when the box is reversed, falls down on to stops, that the baths when placed in their respective cells may rest on the false bottom, so that the tops when the covers are removed may be exactly level with the (then) top of the box, the box being reversed. The baths are the water-tight gutta-percha (Burgess and Key's), and are 4 inches deep, ⅞ths of an inch wide, and 6 long, and the projecting piece (*b*) of the dark chamber must exactly fit them. The baths and covers should be marked S and D, and the same outside the box, to prevent using the wrong bath.

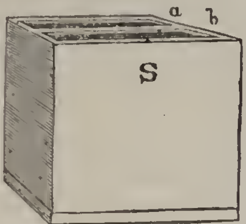

Fig. 2.

The dark chamber, fig 3 (section), is a box made of deal (say ¾ inch thick). The back and front pieces are 5½ inches wide, the side pieces 2 inches, and made to screw on to the ends of the back and front pieces; all are 4 inches high, and cut out at the bottom as at *a b*, fig. 3, so that when put together they form the projection (*b*) to fit into the cell at the top of the camera, and also to fit the baths. The flange, *a*, rests on the camera and bath box, and helps to exclude the light. Inside the box at C are deep grooves cut in the thickness of the wood for the shutter S to slide into, to exclude the light when the dark chamber is out of the camera or bath box. The centre of each side of the box (dark chamber) must have a V groove fitted, corresponding with the centre of the cell in the camera, when placed in it, for the plates to slide in. Covering the box is a black silk bag lined with yellow silk, which must be long enough beyond the top of the box, to contain the plate when it is drawn up and rests on the closed shutter S (see fig. 3). The lower edge of that part of the box which goes into the baths should be well varnished with *spirit* varnish, or covered with a thin layer of marine glue; the *grooves* also. The *modus operandi* is as follows.

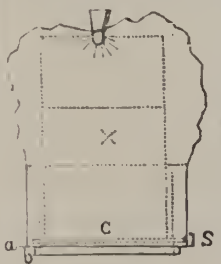

Fig. 3.

Having spread on the ground a square of the black glazed cloth lined with white, to keep all the apparatus in view, and to cover it in case of rain; having taken out the plate-box, I screw the camera on to the tripod stand through a hole in the case; then slide in the thin piece of wood (6), and put the piece (5) into its place, screw in the lenses, and place the focussing glass through the cell in the camera, so that the back of it touches the raised back of (5). Having focussed the object, take out the glass and slide in the back shutter. Then take the baths out of the box, put the clamps into the lid, and reverse the box. The baths are then put into their respective cells, and the tops lightly put over, to protect the contents from dust. Then take a plate from the plate-box, and sliding it into the "dark chamber" (which should have a mark on the silk to show the front), fasten it with the clip (9); the end is then pushed out of the chamber, and having been wiped quite clean, the collodion is poured on, and the chamber immediately placed in the bath S. When the plate is sensitized it is drawn up and the shutter closed. Then, placing it in the cut or cell in the top of the camera, the plate is pushed down to touch the back of the piece (5) (which can be felt); it is then exposed, and after being drawn up, and the shutter closed, the chamber is then placed in the bath D. When the plate is developed, which should be almost immediately if the baths are in good working order, *especial* care must be taken not to draw it up again, but the clip must be removed and the chamber taken out of the bath, leaving the plate in it. If found not sufficiently developed it may be returned to the bath, resting the top against the plate to keep out dust. I find no prejudicial change takes place after development, though examined in the sunlight before fixing. The plate is then washed, fixed with the hypo, well washed, and returned to the plate-box, *collodion end upwards.* If plenty of water be not at hand, the fixing may be deferred, but the delevoper *must* be washed off.

The collodion used should have been iodized some time, as it gives denser negatives than fresh collodion; two drops of pure glycerine should be added to each ounce. The silver bath should consist of 30 grains *fused* nitrate silver to the ounce of distilled water. The bath must be saturated with iodide of silver by immersing a plate coated on both sides with freshly iodized collodion, leaving it in the bath all night. The developer, 30 grains protosulphate of iron, 4 grains citric acid to the ounce distilled water. It is most important that the silver bath should be kept strictly neutral. If at all acid the negatives will be thin and streaky. It should be tested with blue litmus paper, and if found to redden the paper it must be neutralized by adding one minim of a saturated solution of carbonate of soda in distilled water to each ounce of the bath, or less if only slightly acid. The baths must be filtered till quite clear. Both baths should be filtered occasionally, and, when going any distance, the liquids might be carried in bottles holding a couple of ounces more than required for the baths, which should not be filled for use higher than will cover the scratch across the plate, otherwise the bottom of the dark chamber would touch the liquid, which it is better it should not do. Both ends of the plate may be made available by covering the finished negative with gutta-percha dissolved in benzole, care being taken not to *slide* the clip off when removing it.

MASKS AND FACES.

BY PROTAGORAS.

Part II.—Pleasant Portraits again.

In a former article I called attention to the smaller number of pleasant portraits produced, to those of an opposite kind, and I enquired why such was the case. I spoke as though I thought that a really pleasant portrait was as easily produced as any other; but I knew better all the time. In fact, it would be easy to prove that the wonder is that so many are so good as they are, considering, in the proper sense, all the real difficulties. One thing should be noted, that in every other vocation, before a person can earn his living by it, it is necessary that he should pass through a special training to qualify him; but the great bulk of photographers have passed through no such art-education as their *confreres*, the portrait painters. It should be remembered too, that the art itself is but a recent invention, and that in its highest forms it is beset with difficulties of a nature more perplexing than the manipulations of a portrait painter; and, further, that these difficulties are so distracting that, to conquer them, the mind is led into quite another channel than that of art culture. If it were necessary, much reason could be shown why failure is more reasonably to be expected from a photographer than a portrait painter. I do not know that profit would result from such examination, and shall, therefore, pass it by. I should be sorry, however, to offer it as any justification or palliation of failure.

Commercially and artistically the educated public set a very low estimate on the labours of photographers; and, perhaps, in the main they are right. If portrait painting produce no better results than photography, it would assuredly be estimated accordingly This truth can never be too strongly urged, and, if properly appreciated, should act as a powerful encourager to all who wish to rise in their profession. That the public is willing to encourage the art, and pay for it, no better proof can exist than the possibility of men earning their daily bread. Despite all said to the contrary, it has achieved a certain recognized art standard. Prior to its existence certain forms of art ministered to the craving for portraiture; but ivory miniature painting, certain kinds of chalk drawing, water-colour portraits, and even oil-painted ones, have received a serious check, and, except in their highest forms, have been almost superseded by photography. The taking of silhouette profiles is practically lost. Apart from its economy, if our art were not intrinsically better than these other forms, it would not have permanently displaced them. Photography has passed into the wants of civilization, and become one of them.

Speaking of portraiture, there is one point where instruction is required by the average photographer. I refer to the real necessity of making them pleasant and agreeable. I am as well aware as folks generally of the many good things required in producing a perfect portrait. I know that it must be sharp and brilliant, soft and clean; that it must be artistically posed, so as to conceal the defects, and display the beauties; and that all this must be effected without any sacrifice of the natural appearance of the sitter. But, in the present stage of the art, there must be a something else that is scarcely implied in the above conditions. The portrait must be *pleasant.* Because a portrait is sharp, soft, clear, and well arranged, it is not of necessity a satisfactory one. Most photographers consider that it *ought* to be, and, if not, that it is not their fault. In the early days of the art, a "likeness" was all that was required, and whether one looked savage, wretched, miserable, or silly, was a mere accident for which the sitter must take the responsibility. But something more than mere "likeness" is necessary now, and something more than mere "likeness" *can* be produced if knowledge and care be used. There are two words, "character" and "expression," which partly convey my meaning, as being necessary parts in a "pleasant portrait," as distinguished from a "mere likeness." How often is the phrase applied to a portrait, "Yes, it is like you, but there is a different look about the face to your usual one." It is clear that in this instance the absence of the customary expression is a serious drawback to the otherwise good likeness. Another frequent comment is to this effect, "The likeness is capital, but there is a something about it different to your usual style." In this latter case, some error in grasping character has probably occurred: if a man with a stiff and haughty carriage, perhaps he has been requested to sit reclining in an arm-chair, a position his friends never see him unbend to: or, it may be, an indolent, lounging individual is made to sit or stand bolt upright, thus violating all the elements of his character. In endless other ways points of character may be seen by one man and missed by another, and, though their work may otherwise be similar, yet one will command far more success than the other.

When I thus allude to "expression" and "character," as necessary elements for consideration in producing pleasant portraits, let it not be understood that I desire grinning faces or striking attitudes. It is as natural to look grave as to smile, to sit upright as to lounge. Considering that everybody has varieties of expressions and attitudes, and that some are more customary than others, the desirable point is to make the proper selection.

"But how is this to be done? How is a photographer, when he sees a man for the first time in his life, suddenly to seize on the points of his character, so as to know whether he should ask him to smile or look grave, &c?" I admit the question is well put, and that I may be giving advice that is difficult to follow. I willingly admit the difficulty, but not the impossibility. My immediate purpose is to obtain the clear recognition that there is more required in the production of a perfect portrait than the narrow conceptions of science and art—the science of taking a sharp negative, and the art of giving a good position. I say that both these may be present in a high degree, and yet the portrait may not be satisfactory to the general world, however it may be to the photographer, because of the absence of this "individuality of the individual." As there is a mind as well as a body—an inner man as well as an outer man—I want it to be understood that something more is to be expressed in the photograph than the flesh and blood and clothes of the sitter. The inner man moulds the outer man, and thus proclaims its individuality, and this I want to see exhibited. If photography is skilfully handled, it can be made to thus express it. I wish photographers to be impressed with this important fact. It will aid them immensely in doing their work, and make their work more valuable when done. It is the presence or absence of this characteristic expression that makes the difference between the perfect portrait—the real presence—and the "mere likeness."

To acquire the power of thus grasping natural character, professional photographers should be physiognomists; many I know are, and, in their business, they have their reward. One man will have this knowledge almost by instinct, while another will acquire it by cultivation. I believe every man who is successful in producing pleasing and characteristic portraits does it by virtue of this power. Such a man is often said to have a *secret*. Well, I believe it; and, further, I believe that that secret is locked up in his own breast, that it belongs to him, that he cannot wholly divulge it, that he cannot remove or escape from it, and for this sufficient reason—that it is part of himself. But though he cannot rid himself of it, or wholly explain it to another, yet, if he have inclination, he can give out much that may be useful to another, and thus help the development of the germ of appreciation of natural character which every man possesses.

Ordinarily speaking, I know of no such school of life as the photographic portrait room. The man of law may have opportunities of seeing the deep intricacies of the human mind, and the foibles of our weak nature; the medical man may see deeply into the poor human creature under the writhings of pain and the prostration of disease; and the clergyman may witness the deep throes of the wounded and crushed human heart; but for the opportunities afforded of seeing the ordinary human being in his usual aspects, I say again, I know of no school equal to the professional photographer's portrait room. From time to time I purpose detailing my impressions in my own wayward manner; "from grave to gay, from lively to severe," just as the humour suits, I intend to speak; sometimes from the philosophic, and sometimes from the photographic point of view; now to amuse, and again to instruct; but always with the endeavour to "point the moral" while striving, in a gossiping and chatty manner, "to adorn the tale."

PRINTING *WITHIN* THE PAPER.

BY WM. BLAIR.

The fear that carbon prints produced by any of the transfer processes should leave their mounts in consequence of the inadequacy of the cement used to hold them seems to have produced a desire in some quarters that the print should, if possible, be obtained *within* the paper, and not upon it or cemented to it. If the print be taken photographically *upon* the surface of the paper, and in immediate contact with it—such as is the case with my turpentine process, with plain or unalbuminized paper—then I should imagine that every reasonable security is offered for permanence, and, indeed, quite equal to a print within the paper. As ordinary paper is not of a nature to exclude from its interior either air or moisture, I cannot see what additional security can be gained by *imbedding* the impression within the porous body of the paper; indeed, so far as I am myself concerned, I am not prepared to give a great preference to prints taken on the paper over those transferred and cemented. If a proper cement has been used, and the transfer has been effected with ordinary care, I believe that various good cements will be found about as permanent as the paper itself, and that is quite sufficient for all practical purposes. Too much stress, I think, has been laid on some carbon prints having been known to leave their mounts. At the same time, the very fact that the print may look all right at the time of production, and afterwards, from careless cementing, fail to adhere, introduces a certain element of uncertainty into the fate of all carbon prints produced by the transfer process, and gives the purchasing public a right to look for careful and conscientious work in this particular department from the manufacturers of such prints, as any defect, if it exist, cannot be judged of by the eye at the time. Prints taken on or in the paper by a process involving that as a condition of the manipulation have, in this respect, therefore, a certain advantage: they can be relied on, whoever is the maker.

Now where is the advantage of producing prints *within* the paper over those produced *on* the surface? I believe they can have no advantage in point of permanency, and I do not know what advantage they can possess in other respects. Correct theory, I think, is against them. The grain of the paper comes to form part and parcel of the picture, and it does not dissolve like the gelatinous pigment in the lights; and in the shadows it also holds its place as a mixture with the pigment, thereby modifying, to some extent, the purity of the shadows. Even in silver printing, we have long known that a print lost its brilliancy by sinking into the paper, and a long continuous series of efforts has been made to keep the picture *entirely* on the surface, to secure depth and richness of tone, which were greatly sacrificed by absorption into the paper. If such was the case with silver printing, notwithstanding that the very grain of the paper partook, in that case, of the darkening effect of the other medium or menstruum laid upon it—much more in carbon printing, where the picture is produced by the solubility of the substance used, and of which quality the paper does not partake, does it appear objectionable to good results to print into the paper. I have, therefore, long ago rejected the idea of forming carbon prints within the paper as wrong in principle, except merely for *transparencies*, and by the use of a *soluble* pigment, and have chiefly aimed at methods for producing the picture outside the paper, so that the insoluble paper should form no part of what was really the picture, but merely stand as the offset for seeing it.

Mr. Pouncy, I believe, has announced a process by which the prints are obtained within the paper. I have not seen any specimens by this process; and when I do, it is possible I may require to modify the above theoretical views, but I venture them, in the meantime, notwithstanding.

In connection with this subject I may notice a process which it appears has been announced by Mr. Swan some two years ago, and which is recalled to mind in an article in this Journal of 25th June last. That article is evidently written by a person conversant with the subject, I would almost venture to say by the Editor himself, but I have no right to pry into secrets.* I may say, however, that with many of the general views expressed in that article I entirely concur; but in so far as an analogy is drawn between the bitumen process of Mr. Swan, noticed in that article, and my cloth process, I may, perhaps, endeavour to explain that while there may be such a resemblance as to induce a comparison, there is also a grave distinction, which the writer failed to notice, and which, perhaps, he could hardly be expected to notice, unless he had actually wrought my process.

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* The article in question was written by the Editor. In all cases where an article appears without the name or *nom de plume* of its author, such article is written by the Editor or some member of his staff, and is, therefore, under Editorial responsibility We noticed the distinction to which Mr. Blair refers, both in principle and result. Mr. Blair has very clearly stated in his pamphlet the principle, and we had results of both methods before us, Mr. Blair's print being on the surface and brilliant, Mr. Swan's sunken and dull. We were, however, rather noticing the analogy that did exist, than entering into a detailed discussion of the relations of the two methods.—Ed.

The distinction in principle is simply that which I have been referring to. It is long ago since I made an attempt, by dissolving black sugar, mixing it with gelatine, and pouring it into unsized paper, to get a picture *in* the paper by sunning on the one side, and dissolving from the other; but I found that the grain of the paper acted like a strong mixture of white pigment, and rendered it impossible to get depth of shade without keeping the material above the surface of the paper to an extent to defeat the object I had in view; and there were other difficulties, connected with the washing up, &c., that induced me to drop that plan. Mr. Swan's suggestion of a textile fabric is of the same nature: it was to get a picture *within* the fabric. The method I have adopted with cloth is to get the picture *entirely upon it;* and so much is this the case that, while I am developing, the picture, except where attached at the edges, swims entirely free of the cloth, and the cloth, indeed, is only an easy support for the delicate film while moving it about or lifting it in the operation of washing. Indeed, unless the cloth be very open in the texture, the most part of the dissolving pigment escapes by the sides. On the picture being finally developed, it is always a question with me whether I shall let it remain on the cloth, or mount it on paper. If it is a small picture and possessing no peculiar characteristics to make me wish to preserve it on the cloth, I lay a bit of gelatinized paper in a separate basin of cold water; I lift the picture bodily off the cloth, and I lay it down on the paper in the water, and lift the two together, and hang up to dry. I have sometimes lifted the picture and allowed it to dry without any support either from cloth or paper; but, from its tenderness, it is apt to shrink and crumple a little in drying.

I mention these particulars to show that the real characteristics of this cloth-tissue, and process in connection with it, are not yet fully understood. It is true I have indicated all the essential particulars of it in my description, but it is only in the practical working that it will come to be known whether it is of any real value.

Bridgend, Perth, July, 1869.

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COST OF SPIRIT PHOTOGRAPHS.

The recent prosecution of Mumler in New York, and the attention which his proceedings have attracted, has given rise to many articles in the American press. The following amusing *jeu d'esprit* appears in the *Brooklyn Eagle* under the signature of "Corry O'Lanns":—

I went the other day to the photographer.

He lives in Fulton Street. I would give you his name and address, only I am afraid he might not like it, as he is a very high artist (Williamson ?) Keeps at the top of the building.

A young lady presided over a show-case in the reception room; she smiled on me sweetly, and asked me what I wished.

I couldn't tell her *all I wished* at that moment, but mentioned that I wanted to have my lineaments transferred to paper by the subtle and ingenious process of photography.

Whereupon she told me to walk upstairs, which I did.

I was received by the artist, who smelt like a drug store.

Told him I wanted a picture.

Says he, "Will you have it with or without?"

"Couldn't you take it within?" says I.

"Excuse me," said he, "I mean with or without spirits?"

"I don't mind a little spirits," said I, wishing to be sociable.

"What spirit would you like?" says he.

"Well, I generally take Bourbon, but am not particular."

"Pardon me, you misapprehend. I mean disembodied spirits: the shade of a departed relative cast upon the picture in a benign attitude."

"Oh! I see now," said I; "you are a spirit photographist?"

"Well, you see, the thing became the rage, and we had to do it as well as other establishments. All in the spirit line now."

"What kind of spirits do you keep?" said I.

"All kinds," said he; "anything, from a grandmother to an infant, aunts, cousins, distant friends, in any style."

"What kind of spirits are most in demand?" said I, feeling interested.

"Maternal relatives are most in requisition, then children. Aunts are sometimes called for, and we do a few cousins."

"Are not the spirits of departed wives invoked by disconsolate widowers?"

"We have never had a customer of that kind yet."

"What kind of an attendant spirit do you think would become me in a photograph?"

"Something light and cheerful I should recommend. How would you like a beautiful young lady in white—a youthful idol—a remembrance of days gone by—quite a poetical conception—angelic spirit—watching fondly over you, etc.?"

"That would be nice, but I am afraid Mrs. O'Lanns might make a row about it, and Sedilla Ann, if she got the picture, might set me down as a gay deceiver, and the old folks think I wasn't a safe person to have around. I'd rather have that spirit in a separate picture."

"Well, then, try something venerable—a grandmother. Had a grandmother, I presume?"

"I have heard so."

"You don't recollect the old lady? Well, all the better; the likeness will give the better satisfaction. People who have too distinct a recollection of the departed are sometimes hard to please. Had a gentleman here yesterday who wanted to be taken with his wife's aunt. He tried our whole assortment of spirits without suiting him. Asked him what peculiarity in his wife's aunt he missed. He said she always wore spectacles, and none of our spirits were so attired. Assured him that spirits in the other sphere didn't need spectacles, and never wore them. But he insisted that his wife's aunt did, that she could not see a hay-stack at three paces without them."

"Does it cost any more," said I, "to be be taken with a spirit?"

"Yes," said he, "spirits are hard to take; have to use expensive preparations on the plate, and pay an artist to touch them up. Have to charge twice as much as plain photographs."

I concluded to be taken without.

Asked the artist about the group and my dog Mulligan.

He objected to dogs as degrading to high art, but said he would take Mulligan at the same rate as a grown-up person.

Mrs. O'Lanns thinks as Sedilla Ann don't know that we have got a dog—we had only had Mulligan a little while—she will be satisfied with the rest of the family, and we will save fifty cents to buy a geranium bush."

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COLLODIO-CHLORIDE TRANSFER PROCESS.

BY CHARLES DURAND.

One of the advantages of printing collodio-chloride pictures on one substance and transferring them to another is, that the paper upon which the pictures are printed, and which has been saturated with the hyposulphite solution and its compounds, is entirely got rid of, and the film containing the image is removed to pure paper or cardboard, thereby giving much greater probability of permanency.

The first operation is to coat thick Rive paper with a varnish of india-rubber in benzole. The solution must be of sufficient consistency to prevent the sensitive collodion from penetrating in patches, which, if the layer be too thin, it is liable to do. When the india rubber has dried, the paper should be coated with collodio-chloride of a powdery nature, containing to each ounce a grain and a half of chloride calcium, eight grains nitrate silver, one grain citric acid, and four drops of glycerine.

The sensitive collodion, if properly prepared, will be found to print with remarkable brilliancy upon the india-rubber surface, and after the print has been toned, fixed, and washed—which operations it will pass through without the slightest danger of the film either blistering or leaving the paper—it should be left in the water until the operator is ready for mounting it upon the card, which may be done in the following manner.

Coat the card upon one side with a solution of gelatine to which a little glycerine has been added, and, when dry, dip both the card and the print, one in each hand, into a vessel of clean water, and bring the surfaces together, so as to prevent air-bubbles. The print, which, before toning, should have been cut to the proper size, is now easily adjusted upon the card, and may be placed upon a shelf to dry spontaneously. It is a good plan to mount the prints in the evening, and they will then be dry by the following morning. The pictures should then be rolled, and the india-rubber paper afterwards moistened with benzole, when it is easily stripped off, leaving the film with the picture beautifully recessed in the cardboard. The film may also be transferred in the same manner to wood, or to almost any other surface.

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 2.—Salomon Prints.[*]

When an effort is made to produce a Salomonesque print from a negative which, by the ordinary mode of printing, is incapable of yielding such result, it should be borne in mind that the modification required demands correct judgment and taste in its execution; without these it were folly on the part of the printer to expend time and labour on a work which cannot but turn out a wretched failure if any mark of unskilful treatment is registered on the finished picture. Assuming, however, that all my readers possess the requisite qualifications, I shall at once proceed with practical details by selecting, as a fitting example, a 12 by 10 negative received very recently from a customer, and from which I hope, ere these lines appear in type, to produce a Salomonesque print for the inspection of our esteemed Editor, who, doubtless, will report thereon in due course.[†] Let it be clearly understood that the negative in question is quite incapable of producing a Salomon print without the aid of dodging being called into requisition. To speak the plain truth, the probabilities are that the author of the negative has never seen a Salomon print, nor has he ever dreamed that the production of such a print from his negative is possible. *Eh bien, nous verrons;* and whilst waiting to see, I shall endeavour to convey some description of the negative, together with the *modus operandi* to be adopted in my efforts to procure the desired result.

The negative is a well-exposed one; its degree of intensity I class as medium; the range of tone is contracted, and pitched in too low a key to produce those sparkling touches of highest lights which give vigour to a picture and present evidence that a master hand has worked out the composition. I might, however, sum up the merits of the negative now before me by describing it as one of average quality, taken by a photographer of average ability, whose departure from artistic rule does not extend beyond the average of error. I therefore take it as a fair subject to operate upon, and shall proceed to test its capabilities practically by striking off proof the first. The resulting print is just such an one as might be expected from a fully-exposed but rather flat negative: the eyes appear dull and "fishy," the head lacks force and roundness. My first effort must therefore be directed to the removal of the defects alluded to by applying, where needed, a few decided touches with Indian ink. This operation is intended to give light to the eyes, breadth to the forehead, and relief to the heavily cast features; and, to effect further improvement, a few neatly applied strokes of the brush will, I think, add to the beauty of the flowing hair.

Having completed thus far, I proceed to strike off proof number two, which suggests one or two alterations of a minor character, that are soon executed. And now for a fair start in an effort to produce a print as nearly approaching the Salomonesque as the materials I have to work upon will admit of.

First, I have to bear in mind that I require a print of far greater vigour than either of the test prints before me, which were printed upon paper sensitized after the orthodox fashion, viz., "five minutes' floating, *if* you please." The necessity must plead excuse if, for once, I become rashly heterodox, and float the paper ten minutes in lieu of five. My motives for departing from established rule I shall explain in my next chapter; at present we have only to imagine the paper sensitized, dry, and placed in close contact with the negative in the printing-frame. On glancing over my proof prints, I find that the shadows lack depth; I therefore commence the printing in a subdued light. "Why so?" Because the kind of light described will penetrate the most transparent parts of the negative, but cannot pierce through the semi-opacity which represents the highest lights and middle tints of the picture.

Whilst the printing progresses, I shall fill up the moments of leisure by cutting out a mask from one of the proof prints. This operation consists of cutting out the image from the background neatly with a penknife or small pair of scissors. The mask so obtained I place in the sun to darken, and directly afterwards I examine the printing progress, and find the shadows have reached a depth sufficient to suit present purposes, which event makes it requisite that I at once move the frame into a stronger, yet still diffused, light, where I allow it to remain until the printing is complete up to stage the first. On removal from the frame, the appearance of the print would cause non-experience to exclaim, "A case of roasting, most certainly!" Why think you so? "Only look at the overdone face, and you have your answer." Again, how so? "Because it is over-printed and done brown." Nothing of the kind; the appearance of over-printing is due to lightness of the background. When I cause light to become dark you will then find cause to alter your verdict, and you will learn the curious fact that man might see, yet not perceive; that eyes do not at all times convey to the mind correct impressions, as was fully proved in the case of M. Salomon's prints, which were made the subjects of much erroneous criticism. "The faces are so like alabaster; surely ordinary paper cannot show a face so white." Wrong; the paper on which I now write would be like the driven snow in comparison with the whites so falsely judged of. The faces of M. Salomon's portraits are white only by force of contrast, and it is an effort to produce a similar degree of contrast which induces me to place so carefully on my imitation print the mask I recently prepared. This mask, when a single copy only is required, I secure temporarily with flat weights; but when a number of copies are required, the better plan is to paste the mask on to a piece of glass somewhat larger than the picture to be operated upon. On examination, I find that the image is lighted from the right-hand side of the picture. If, therefore, I would steer clear of an incongruity, the graduated play of light and shade must proceed from the same side of the picture as the image is illumined. To produce the desired effect, I tear out roughly a brown-paper mask, with which I cover up such portions of the background as are intended to remain light, leaving bare and exposed to light those parts that need printing very deep. The printing is conducted in a diffused light, and I keep a sharp eye on the work, and move the brown paper from time to time, to avoid anything that approaches to an abrupt outline. By gently moving the paper as described, the masked image is at length reached, which circumstance must be regarded as the most critical portion of our operations, and success or failure depends on skilful handling and watchful attention. I now turn the print completely around, at short intervals, to bring the edges of the silver paper mask face to face with the direct light, and am at length rewarded with the success which, as a rule, follows the practice of patience and perseverance.

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[*] Continued from p. 306.

[†] The print sent is rich and vigorous, possessing many of the chracteristics which distinguish M. Salomon's prints.—Ed.

At this stage of our proceedings, it will be observed that the once dark face has, by force of contrast, been made to appear light. Had I in the outset printed the image to suit the background, on darkening the background the image would appear washy and flat; but, having taken advantage of the licence given by contrasts, I have secured an amount of detail which, under different treatment, would have been partially lost. Should any portion of the background or image need further printing, I replace the mask and proceed as before. To cut a long story short, the print completed, I set it aside for toning. But ere I refer further to toning matters, I might just remark, with reference to M. Salomon's practice, that in the production of his much admired backgrounds, he frequently has recourse to the dodging I have endeavoured to describe: canopies and screens might serve him at times, but my eyes serve me untruly if, in the majority of his pictures, they have failed to detect the traces of after dodges. I shall, however, have occasion to speak further of this subject anon.

To tone a Salomonesque print a non-bleaching gold bath should be used. Emphatically I repeat an explanation that I have on more than one occasion before given: the reduced silver of which the print is composed is the source from whence warmth of colour must be derived. The deposit of gold acts as a glaze to subdue or totally conceal the real colour beneath. Chlorine, if present in sufficient quantity, will attack the reduced silver, and thus destroy the base of the picture, which no superstructure of deposited gold will restore. A strong deposit of gold causes a black tone. The happy medium is needed to produce a Salomonesque effect, and to secure that medium it would be wise to tone the ordinary day's work before immersing the Salomon prints into the toning fluid.

In concluding the remarks that a limited amount of time permits me to offer, I would observe that, having described the treatment required by a negative of medium intensity, there remain to be added some comments on the matter of printing from strong and feeble negatives. With those subjects I must deal in the pages of another number; at present, time compels me to write

(*To be continued.*)

AN IMPROVED METHOD OF PRINTING PHOTO-LITHOGRAPHS.

BY WALTER B. WOODBURY.

Since the discovery of Poitevin that an exposed film of bichromated gelatine, when damped, might be employed in the same manner as a lithographic stone, and impressions taken in printing-ink, numerous have been the suggestions for utilizing this principle; but where the printing has been done from the gelatine itself, and in the ordinary lithographic press, that substance, from its very nature, when damped, has prevented any number of impressions being taken from it. Where this property is used to transfer to stone, a great deal of sharpness and delicacy is lost.

The prints exhibited by Tessie du Motay during the Paris Exhibition were certainly very fine, but it transpired that but a small number of impressions could be obtained without a fresh plate being prepared after every few proofs. This is doubtless owing to the rough action the gelatine is exposed to in an ordinary lithographic press, which would, I imagine, soon break up the surface of the gelatine. Again, where an elastic medium is used to give an equal pressure, the same result would follow.

The method by which I propose to obviate these difficulties I will now explain. For my process of photo relief printing I had to invent a special press, in which two absolutely true surfaces of glass could be brought together in such a manner that a uniform and perfectly true pressure could be brought to bear on what was placed between them, and that when that pressure was once adjusted, the same could be regularly obtained. Now, what I propose to do is to apply my press, or a slight modification of it, to the photo-lithographic process of Poitevin, and I think by this means a very much larger number of impressions may be obtained than have been hitherto; and as so much more delicate a pressure can be given, much finer impressions would result.

To proceed, a sheet of patent plate-glass should be evenly coated on a levelling-stand with a thin solution of gelatine and bichromate, and, when dry, exposed under a negative. This plate may be kept for a considerable time before using, as, although it would become partially insoluble, its other properties remain intact. After exposure, the plate is placed on the bottom plate of the press, which has a universal motion, and when the top plate, which has a plate-glass surface, is brought down on it and bolted, the bottom one is raised by means of a screw underneath until its every surface touches the top plate of glass, and is then permanently fixed in that position.

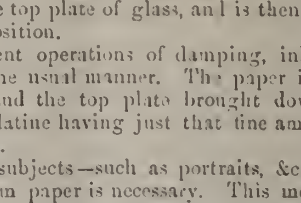
The subsequent operations of damping, inking, &c., are carried on in the usual manner. The paper is laid on the inked surface and the top plate brought down on it, the thin film of gelatine having just that fine amount of elasticity necessary.

For delicate subjects—such as portraits, &c.—a fine surface and uniform paper is necessary. This method, as will be seen, possesses no novelty beyond the application of a special press, by which much finer proofs, and in much greater numbers, can be obtained than has hitherto been done.

Correspondence.

SILVER DIPPERS FOR GLASS BATHS.

Sir,—With reference to protecting glass baths from breakage by glass dippers, I wish to say that if your correspondent C. W. Smartt, and any others who use glass dippers, were to employ those made of silver wire, of about one-eighth to three-sixteenths in diameter, and of this shape—



(length according to bath), they would obtain the following advantages:—

The *impossibility* of breaking the glass bath with the dipper, exceeding lightness, and improbability of being themselves destroyed.

Possibly some might think that the copper in the silver wire would exercise an injurious action on the bath; but, as is well known to anyone slightly conversant with chemistry, such could not be the case; and after having used them for the last three years, my experience leads me to prefer them to any description of dipper.

The probable expense might prevent some persons using them, but for a bath which will take 12 by 10 plates the price is only about 15s., and I consider the advantages gained more than counterbalance the cost. —I am, sir, yours obediently, W. L. S.

Plumstead, July, 1869.

GELATINE IN THE PRINTING BATH.

Dear Sir,—I notice in the "Echoes" of last month that your genial contributor, the "Old Photographer," has done me the honour of echoing my words, but, in his own courteous way, he refuses to endorse the idea that secretiveness forms any part of M. Salomon's character. I have hitherto been led to believe that when practical experience forces upon us a correct knowledge of the world and its ways, we find in the "wake" of time a mirror wherein we see our former selves—generous, it may be, yet trusting fools. But the strong faith exercised by the "Old Photographer" leads me to suspect that his view of human nature is most frequently taken through rose-coloured spectacles. If such be the case, the practice does honour to his aged heart, but I fear that conclusions reached through a rosy medium scarce approach the reality. Probably the stern battle of life I have been engaged in has made me suspicious, possibly somewhat misanthropic; at all events, I religiously believe that—

> The charm of truth is oft impressed
> On words, by caution, half expressed:
> The "he'ms" and "ha's" truly betoken
> That the better half remains unspoken.

Apropos of the above, I am tempted to translate into plain English a *mot* I have just heard, having reference to M. Salomon's late visit to England, and which was spoken by a foreign artist of world-wide fame, who is said to be an old and intimate acquaintance of the great French master. Briefly, the story may be rendered thus—

> He told them part, but far from all;
> His words were brief, his teaching small;
> In short, he told them nothing more
> Than what to most was known before.

To come, however, to the point which brings me at issue with my venerable *confrere*, I (as a preliminary observation) would just remark that I have no further interest in the matter disputed than I derive from a desire to elucidate truth; and, as a first step towards the attainment of my wish, allow me, Mr. Editor, to ask your kind intervention and assistance; and, as an aid to the work of charity I ask you to engage in, I enclose, for your inspection, the experimental examples alluded to in my article on Salomon prints, and I must beg of you to examine narrowly that portion of the print to which my name is appended, for there you will perceive indications of the pictures having been partially removed, as if an upper stratum of reduced silver had been stripped off the albumen surface. I think that when you have duly considered the matter to which your attention is solicited, you will scarce hesitate to join with me in the belief that a seventy-grain bath and ordinary albuminized paper could not—cannot—produce the peculiar defect presented by the print I ask you to examine.

I have experimented in every variety of silver printing as extensively, probably, as any man living; and I have no hesitation in asserting that, with ordinary treatment, to produce such an effect as that I have specially pointed out, would be to all intents and purposes an extreme improbability, if not an actual impossibility. I could produce a similar result in a variety of ways; but with albumen paper and a silver bath—*both* pure and simple—*never!* I have produced a similar effect when a mucilaginous substance has been added to the silver bath, also when I have applied a sensitive layer of wax, starch, gelatine, or dilute albumen as an extra coating to the paper; but, as before remarked, under usual conditions and treatment, I have never met with a defect bearing any unmistakable resemblance to the stripped-off appearance now in question. Such being the case, I cannot but conclude that M. Salomon either keeps his method of printing a profound secret, or he described the whole to those who knew just enough of the French language to misconstrue the explanation they received. Speaking personally, I incline to the former belief, although I fully admit M. Salomon's right to retain what does not make his productions a whit the less perfect and beautiful for being a secret. Frenchmen are proverbially a very secretive people, and if the remark will add force to my argument, I would quit the subject of M. Salomon by remarking that no comment offered by the "Old Photographer" is capable of showing that the great French photographer is exempt from the general failing.

In conclusion, a word or two with reference to my old friend and knight of the gelatine bath, Mr. Palmer, to whom I address the following query: Can a man be anxious to father a principle which his efforts are put forth to condemn? Had I been desirous of claiming parentage to the gelatine bath, I would not have denounced the bantling I felt anxious to father and protect. Ere Mr. Palmer had written about gelatine, I had experimented in a parallel direction. When Mr. Palmer entered the field and forestalled me, I felt much pleasure in testing his method, and subsequently, with my pen, in crediting him with the method at its fullest value. I would just remind Mr. Palmer that if I, for example, felt so morbidly sensitive in claiming my rights, I should be compelled to keep a clerk to write expostulatory epistles. But when a man is wedded to a hobby, the pleasure derived from its pursuit renders comparatively valueless the applause which minds less absorbed are wont to crave after.

Trusting, Mr. Editor, the length of this epistle will not tempt you to pull forward "Betty's basket," or induce you to think about scissors, I conclude by subscribing myself as yours faithfully, W. T. Bovey.

[The examples sent by our correspondent consist of two parts of a picture printed together on different samples of paper from one negative. That marked with our correspondent's name is rich in the blacks, but colder, weaker, and less rosy in the half-shadows and half-lights than in the other half on M. Salomon's paper. To what cause this is due we are unable to say. The examples in question are calculated strongly to confirm our correspondent's view, but we must confess that we are very unwilling to believe that the frank, unequivocal statement made to ourselves by M. Salomon, to the effect that he used a simple 15 per cent. silver bath, was made in other than good faith.—Ed.]

PERSPECTIVE AND PHOTOGRAPHY.

Sir,—I am sorry to have to trouble you with a rather long list of errata to my paper on this subject, caused, doubtless, by my bad writing.—Your obedient servant,

Brighton, July 5th, 1869. Amateur.

Page 284, column 1, line 22, for *produces* read *produced*; page 306, column 1, bottom line, for *M. Campagne* read *M. Cassagne*; page 307, column 1, line 18, for *CSH* read *GSH*; line 30, for *through* read *though*, for *by* read *be*; column 2, line 2, for *dfe* read *dec*; page 320, column 1, line 24, for *one end* read *the ends*; line 32, after *picture* add *and all points in the horizontal line will be displaced towards the centre*; column 2, line 18, for *screw* read *screen*; page 296, diagram, fig. 4, on the left of second horizontal line, for F'' read F, on the left of third horizontal line, for *C* read *G*; fig. 5, on the lower horizontal line, second letter from the right, for *c* read *e*; page 320, fig. 7, horizontal line beginning from the left, for *D d' F f' B* read *D d F f B*.

KEEPING COFFEE PLATES AFTER EXPOSURE.

Sir,—I should feel much obliged to those photographers who have had experience in the use of coffee dry plates if they would kindly state what they have found to be their keeping powers after exposure. I have used them a good deal, and have found them to answer exceedingly well with development not delayed beyond two or three days or a week; but I have been much disappointed in the result after a longer period.—I remain, sir, your obedient servant,

W. F. Morgan.

2, *Berkeley Square, Bristol, July* 3rd, 1869.

MR. DURAND'S PERMANENT SENSITIVE ALBUMINIZED PAPER.

My Dear Sir,—In my last record of the month's photographic echoes, I referred to some experiments I had made with a permanent sensitive albuminized paper. I find that a curious error has occurred in the printed statement of my remarks. I am made to say that "I have tried a sample of Dr. Diamond's permanent sensitive albuminized paper." Now as, among the many important contributions which Dr. Diamond has made to the art, I have never heard that the preparation of sensitive albuminized paper with keeping properties was one, the sentence does an injustice to Dr. Diamond; and as Mr. Charles Durand is the manufacturer of the paper to which I referred, a still more serious injustice is done to him, especially as I had the pleasure of testifying to the great excellence of the paper in question. Under such circumstances, I think you will not object to correct the error, although it involves inserting a letter from me in excess of the monthly contribution to which I am so sternly restricted.—Yours obediently, The Old Photographer.

PHOTO CRAYONS.

My Dear Sir,—Although I do not think Mr. O. Sarony has any legal claim to his patent, yet I do think we ought to be deeply indebted to him for the suggestion; and to show him I am so, I shall purchase £5 worth of his "hatched" backgrounds, as I anticipate a brisk business in photo-crayons.

I tried one on Friday, and showed it to some of my customers, who were so pleased with it that I got orders for four of them in the same day.

I procured from a brother photo a few of the backs, and hope I shall require a large number, but my object in writing is to ask you how we shall produce different tones. I think the tones rather too black. I use the Eburneum developer.—Yours, Photo Professional.

July 5th, 1869.

[We have already shown the grounds upon which Mr. Sarony is entitled to his patent, and it will be necessary for some one to show that the same thing had been publicly produced before in order to invalidate the patent. But, as our correspondent states, Mr. Sarony uses his patent so as to be of service to photographers, and not as a clog on their efforts. The means of getting warmer tones is to give full exposure, and use acetic instead of citric acid.—Ed.]

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 4th ult., M. Balard, President, in the chair.

M. Lucy Fossarieu presented the Society with a copy of his recently published pamphlet on "Photography upon Porcelain and Enamel." He states that his process is a very simple and practical one, and has been elaborated and employed by himself during the last six years.

MM. Koch and Wilz, manufacturers of photographic apparatus, addressed a communication to the Society in reference to the remarks made by M. Fierlants, at the March meeting, upon preserving the rectitude of lines in architectural photography by means of a moveable lens. MM. Koch and Wilz stated that since the year 1851 cameras had been manufactured by them with movable fronts, which allowed of the lens being shifted either in a horizontal or vertical direction, according to the will of the operator.

In respect to this reclamation, M. Bertsch stated that it was folly to suppose that the construction of cameras on the principle in question was not generally known. The effect produced by shifting the lens was, in fact, to heighten or depress the camera, or, rather, to increase its dimensions; the operation gave, however, results only at the expense of clearness.

M. Despaquis addressed a letter to the Society in connection with the communication of M. Edwards, made at the last meeting. Its contents were as follows:—

"At the last meeting of the Society, M. Edwards, of London, presented some carbon prints transferred to paper prepared with gelatine and alum, which he denominated the transport material. At the two previous meetings I had communicated similar information to the Society, and I am indebted to M. Aime Girard for his friendly statement to this effect made in my absence.

"I have never heard of nor read in any journal that this description of paper was employed previously to my communication, but even in the event of its having been used six months ago, as asserted by M. Edwards, that period would still be considerably posterior to the date of a patent which I took out on the 30th October, 1863, for the employment of coagulated gelatine as basis for the sensitive carbon film. I then coagulated the gelatine with bichromate, and subsequently exposed. Some months afterwards I coagulated by means of bichloride of mercury, then with alum, and at present I use lactic acid for the purpose.

"I take advantage of this occasion to indicate my present mode of proceeding. I dissolve 100 grammes of gelatine in 400 grammes of water, and when the former is almost entirely dissolved I add 600 grammes of milk. I agitate, and allow the dissolution to continue on a water-bath. I then add 30 or 40 grammes of sugar-candy, to impart body to the gelatine, and render it more agglutinative. A very thin film of this solution applied to the surface of paper, linen, wood, &c., becomes sufficiently insoluble to effect the transfer of carbon prints, when it has remained for a period of four-and-twenty hours, and become properly dry. It is then sufficient to plunge it in cold water for a few instants, or to expose it to steam over boiling water.

"I thank Mr. Edwards for his presentation, which has, indeed, given me an opportunity of making this short communication; and I also thank him for the proof he has given of the facility and moderate cost with which prints of this kind may be prepared; but I could not remain under suspicion of having appropriated an application which I was the first to make use of."

M. Ducos du Hauron presented a copy of his pamphlet entitled "Photography in Colours Solution of the Problem The pamphlet details M. Ducos' process of chromo photography, a digest of which was given by M. Davanne at the last meeting of the Society (see p. 319).

M. Despaquis exhibited some carbon prints produced by enlargement. He stated that there was nothing absolutely new in the manner in which they had been prepared, but that the manipulations consisted simply in—1, covering a glass plate with a sensitive carbon preparation; 2, exposing the film to light through the glass in an enlarging apparatus; 3, washing and developing the image in a zinc dish by means of warm water. The prints are mounted by being backed with ground glass, which allows of the pictures being viewed either by reflected or transmitted light.

M. Despaquis also promised to exhibit some proofs upon linen and wood as soon as the weather was sufficiently favourable for their production.

M. Marion presented some gelatine-chromate prints of different colours, and briefly narrated their mode of production; he promised to put forward a pamphlet describing fully the details of manipulation.

M. Loewe exhibited a collection of enlargements obtained from ordinary negatives retouched with printer's ink, and subsequently transformed into heliographs or litho-photographs. He first produces a positive of carte-de visite size, and enlarges it upon bichromated paper. The enlargement, when placed in water, is reproduced in *intaglio*, and in this form is inked, care being taken that all the cavities are filled with colouring matter. All superfluous ink upon the surface is removed, and the proof allowed to dry. It is then retouched with a fatty ink, transferred to zinc, copper, or stone, and printed off in the ordinary manner. By means of this process an enlargement may be obtained in twenty-four hours of any design, capable of furnishing a considerable number of copies.

M. Jeanrenaud communicated an improvement which he had effected in his method of transferring carbon prints, as follows: the tissue carrying the sensitive carbon film is placed, after exposure to light, in a pad of blotting-paper somewhat moistened. While the tissue is thus being rendered more supple, a sheet of albuminized paper is immersed in alcohol, at 36° Cent., contained in a large test tube; the albuminized paper is merely dipped into the liquid and withdrawn, and placed, wet with alcohol, upon a glass plate, prepared surface uppermost. The carbon tissue, which has now lost its stiffness, is then imposed upon the albumen surface, and made to adhere to the same by means of a roller. After treatment under a press for a few instants, the whole may be subjected to the action of boiling water without risk of separation of the two surfaces. M. Jeanrenaud claims many notable advantages for this mode of proceeding.

M. Bertsch addressed to the Society an interesting communication upon the persistence of images upon the retina of the eye, describing a method of arriving at the exact period during which the visual nerves vibrate after being struck by luminous rays. M. Bertsch gave an experimental demonstration of his theory.

The proceedings then terminated.

Bristol Photographic Society.

On Thursday, the 24th of June, this Society met at the Philosophical Institution, Bristol, Mr. Ennel in the chair.

The minutes of the last meeting were read and confirmed.

Mr. Guttenberg was elected member of the Committee in place of Mr. Bark, resigned; and Mr. Husbands was elected treasurer; Mr. W. H. Warner, of Ross, was duly elected member.

The Chairman put to the meeting the following resolutions that had been proposed previously in committee:—

1. That assistants of all classes shall be admitted as members at half the regular subscription, viz., 5s. 3d. per annum. Carried unanimously.

2. That it would be advisable to have an excursion during the summer. The end of August was agreed upon; and, on the motion of Mr. John Beattie, the details of arrangement were left in the hands of the Hon. Sec.

Mr. Beattie then gave a succinct description of the latest methods of photographic printing, with especial reference to carbon printing. After a short description of a simple method of making pictures on dead opal surfaces, he exhibited some samples as remarkable illustrations of the plan proposed by Mr. Davis lately. The pictures were completely upon the surface of the coarsest drawing-paper, and one, as exhibited by Mr. Davis, on a Sarony mount, with the effect below undisturbed.

After a short statement of how patents were sometimes wrongfully claimed and obtained, and how patentees succeeded in protecting such by the tryanny of the law, and how the public good suffered thereby, Mr. Beattie offered £5 as a subscription towards a fund to be raised for the purpose of testing unjust patents. He then exhibited samples of carbon prints in oils, pigments on canvas and paper by Mr. Pouncy. The public are acquainted with the excellent qualities and the method of producing these. Then some samples were shown on paper, all that could be desired in half-tone and half-light, printed from an inverted negative without transfer by Mr. Pouncy. The method of producing these is to prepare or coat the paper with the usual prepared pigment; the paper is then rendered transparent by a volatile oil, which, after printing and development, is returned to its original opacity and whiteness.

Mr. Beattie then exhibited most interesting experimental samples by Mr. Blair, of Perth. They were prints on paper by single transfer, and some without any transfer at all, some with three or more layers of pigment, some on cloth, some exceedingly good, and others evidently in the condition of improvement. The methods of production are so simple and so ingeniously described in Mr. Blair's pamphlet that those interested are referred to it. Mr. Beattie stated he had avoided as much as possible questions of little utility connected with the history of carbon printing, but, after carefully reading almost all that has been published on the subject, he came to the conclusion that the methods now in use in England depended for their origin more upon Mr. Pouncy and Mr. Blair than any other men. He had scarcely referred to the method claimed by Swan, Johnson, and Edwards, because they were complex, and were fettered from general use.

Then Mr. Gillo, of Bridgewater, exhibited some most beautiful samples of enlargements in common collodion, enlarged from card size negatives through the lens to about whole-plate size, whitened with bichloride of mercury, and toned down with weak hypo, then, when dry, transferred to paper in the following manner. A sheet of thin Rive paper is brushed over with dissolved gelatine; when still moist, laid down nicely on the dry collodion transparency. It is then set aside to dry, when, as it dries, it will leave the glass; it may then be cut and mounted. Too much could not be said for the soft, delicate effect of the samples shown by Mr. Gillo. The same gentleman exhibited a series of lovely card portraits on Obernetter's paper. They were contrasted with prints made in the usual way to great advantage.

Conversation followed on various subjects.

Mr. Ennel promised a paper at the commencement of the next session, "On Glasshouses and Lighting," and, after the usual votes of thanks, the meeting adjourned.

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Talk in the Studio.

Mr. Davies' Lac and Gelatine Process.—In answer to a correspondent in our last, who failed to form a proper emulsion of lac and gelatine for use in the excellent printing process of Mr. Davies, that gentleman has kindly furnished the following hints:—"Your correspondent evidently has used the lac solution too thick. Remedy: thin it with spirits of wine. Or, he has used the gelatine too weak. Remedy: strengthen it. The fault may be in a little of both combined. Some samples of lac precipitate more than others, but all throw down a more or less bulky precipitate. The thinner the solution the more thoroughly miscible is it with the gelatine." Mr. Davies also informs us that he finds the application of the process to printing on canvas quite successful. Some further details and description of examples in our next.

Chronological Albums.—A contemporary, speaking of a new style of album in which some attempt at the chronicling of biographical facts as well as preservation of faces is attempted, says:—"A novelty has appeared in the album way, namely, a space to introduce a record of births, marriages, and deaths in contiguity to the likeness. Pleasant to know, when you present your carte to a lady friend, that she is reserving a space for the assurance of your demise!"

Photographic Competition.—Honest competition is one of the most valuable sources of progress; but we often regret to see petty and uncourteous developments of the competitive spirit amongst professional photographers. In a provincial journal before us we find one photographic firm challenging the terms and truth of the advertisement of another professional photographer, stating the price and characteristics of the said opponent's lens, and proceeding to boast of a bigger and a more rapid lens. We avoid mentioning names, but we feel that this kind of thing does not elevate professional photography in public estimation.

To Correspondents.

E. Fisher.—For your purpose it is probable that nothing will be better than blinds of common white calico, and, as you will have light from the opposite side in the room, the calico may be of the thick and unbleached kind. Where you wish to exclude direct sunlight, and admit as much light as possible at the same time, the thinnest bleached white calico should be used, or even the glazed semi-transparent material known as "tracing linen." You will require blinds to both sides and roof, where direct sunshine will enter. The example you enclose lacks shadow. It is too evenly lighted all over the face, and hence relief and modelling are wanting. It is important to have one chief light from one source, the opposite side being shadow relieved from blackness by reflected lights. 2. Yes; place the sitter just under the opaque portion, so as to avoid a direct vertical light, which would give a snowy patch at the top of the head, and dark shadows under the eyes, nose, and chin.

Merlin.—You have scarcely read the records of what has been proceeding in America with sufficient care. The spirit photographs which have formed the subject of recent controversy in America have not been put forth with similar claims to those well known in this country, and recognized as mere tricks, to cause amusement. In the ghost stereo slides of which you speak, the effect was obtained by introducing for a few moments only, while exposing the general subject, a figure with ghostly drapery. This being half impressed upon the plate over the other objects in the room gives the ghostly semi-transparent effect to the figure so introduced.

G. M. R.—Yes; at least six months for a cadmium collodion. For use almost immediately, use half iodide of ammonium and half iodide of cadmium, adding from half a grain to a grain of bromide of cadmium to each ounce. For long keeping collodion, use a larger proportion of bromide.

One who Tries.—Send us an example of the "sponginess" of which you complain, in order that we may give you accurate information and advice. From your description of the "shot holes," near the bottom of the plate, which trouble you, we fancy they must be caused by splashes of nitrate of silver, arising from pushing down the sliding shutter of the plate-holder too hastily after exposure. Always wash the glass well after cleaning with acid or alkali; but the holes in question woutd not come from the use of an alkali in plate-cleaning.

Amateur.—We have no doubt that you can obtain a good landscape carbon print on application to the Autotype Company, No. 5, Haymarket. We understand that the Company do not intend to prevent amateurs practising the patent process for their own use. The Autotype Company will supply tissue.

J. S.—Mr. Henderson's mode of vignetting is, of course, only applicable to camera printing, and not to direct printing on paper. For vignetting paper prints in the sun, vignette glasses are the only efficient means, and if they print through they may be supplemented by additional masking with paper, cotton-wool, &c.; but, as a rule, vignettes should not be printed in the sun.

W. B.—The oyster-shell markings of matt silver are often very perplexing, as they may spring from various causes. The most common cause in warm weather is excessive lapse of time between exciting and developing, either from long exposure or other cause of delay. This delay, especially if the collodion be somewhat horny, causes the silver solution to partially dry on the film, and so, when the developer is applied, produce a stain of reduced silver. Such stains also occasionally occur from the condition of the bath, and not unfrequently from the free nitrate solution on the film coming into contact with and absorbing some contamination from the inner frame of the dark slide. To get rid of the defect, wash well and frequently the inner frames; or let the plate come in contact only with clean blotting-paper; use the nitrate bath as weak as convenient; do not keep the plate too long in the bath; avoid delay, as much as possible, between exciting and development; avoid using a horny collodion, or, if that cannot be helped, add a few drops of water or of glycerine to each ounce of collodion; immerse the plate in the bath as soon after coating with collodion as possible.

Tomahawk.—There is generally a gradual tendency to the reduction of chloride of gold into the metal or into oxide of gold when it is kept in a neutral aqueous solution. If the metal have been precipitated, it will be easily seen by the purple tint of the deposit. If you find the deposit of carbonate of lime coloured purple by the precipitate of gold, the simplest plan will be to redissolve it with nitro-hydrochloric acid, using sufficient excess to dissolve the carbonate of lime, forming nitrate of lime and chloride of calcium in the final result. It is quite true that, if the solution has not been tampered with, the strength you mention ought to tone rapidly and perfectly; and either the precipitation into the metallic state, or the formation of an inert solution by a portion of the passing into a state of auric acid must have taken place to account for the difficulty you have met with. In the latter state the addition of a little hydro-chloric acid, and, in the course of a few hours, again neutralizing, sometimes answers. Before condemning the solution, try it with a piece of freshly prepared paper. It sometimes happens, with papers of the class you mention, that if there be any tendency to inactivity in the toning bath, they tone very slowly. There is no simple test for the quantity of gold in solution. The most accurate is the oxalic acid test, which is very delicate, and requires care and practice in chemical manipulations to use satisfactorily. There is no chance of any loss of the gold in manufacturing the chloride.

C. B. Riversdale.—We shall have pleasure in proposing you as a member. Please send us your address, that we may do so. On the whole, your views are good, the spots, of course, excepted. The most probable cause of the spots appears to be particles of undissolved gallic acid left on the plate. Filter the preservative solution carefully; also the developing solutions. As to the mixing of the two preservative solutions, of course, an ounce of the mixture only contains half the proportion of the gallic acid, which an ounce of the latter solution alone contains. As, however, Mr. Gordon's instructions, given in the Year-Book, are based on practice, we presume the proportion is not of vital importance. When the three-grain solution of gallic acid solution is applied first, it is practically diluted by the addition of the gum solution. You will be safe in trying the collodions Mr. Gordon names. 2. The pipe for the worm of a still should be of copper, brazed, not soldered. We have pleasure in again hearing from you.

J. M.—The markings in No. 1 are apparently due to the draining of the developer in lines or streams on the face of the negative whilst it has been held up to the light for examination. The spots marked No. 2 are of a less definite character, and it is not easy to assign their cause certainly. They may arise from splashing of nitrate of silver; from pushing down the sliding shutter suddenly; or they may arise from drops of water from the bottom of the developing glass falling on the film; or they might arise from imperfectly cleaned glasses.

N. S.—We fear very much that you have got some contamination, the nature of which we cannot even guess from mere description. Imperfectly reduced sulphide of silver would give many of the results you describe; but there seem to be several elements of uncertainty in the materials with which you have worked. Your best plan will be to send the materials to a refiner for reduction, and obtain the value in nitrate of silver. You will find the names of firms undertaking such work in our advertising columns.

C. F. Mevius (Rennis).—Mr. Johnson has not published any other detailed information regarding his carbon process beyond that given in his papers before the Photographic Society, and published in our columns on May 21st and June 18th. You will find in the News of April 2nd our description of Mr. Johnson's operations as we saw them, the description being, before publication, examined and endorsed by Mr. Johnson. We have not seen Mr. Johnson use the lac solution in the double transfer process, nor have we tried it ourselves. Our own conviction is that it is unsuitable, and will (especially if excess of ammonia be present) risk involving the difficulty of frequently causing adherence to the glass, inasmuch as in the lights of the picture, where the glass is uncovered, the thin layer of fatty matter on the glass will be dissolved by the ammonia, and the paper to which the transfer has to be made will, of necessity, in such cases, be cemented to the glass by the solution of lac. Try, instead of wax, stearine dissolved in alcohol; take care not to use the water too hot in developing; and, instead of lac solution, try the gelatinized paper, applied as described in our article April 2nd. Then let the paper be thoroughly dry before attempting to move it. As a rule, it will, when quite dry, curl off without application of heat or effort of any kind.

J. Gostick.—As no such rumour has ever had currency in the Photographic News—indeed, we had never heard it at all—our correspondent will see the inconvenience of any contradiction of such a rumour in our pages.

Several Correspondents in our next.

Photographs Registered.

Mr. J. Wilson, Ashton-under-Lyne,
Photograph of George Mellor, Esq.

Mr. J. B. Clayton, Nottingham,
Photograph of Funeral Procession of the late Sir Robert Jukes Clifton, Bart.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 557.—July 16, 1869.

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THE NEW FINE ART COPYRIGHT BILL.

Our readers will learn with interest that the Bill for amendment and consolidation of the law of copyright in relation to works of fine art has been withdrawn for the present. The Bill, as we have before explained to our readers, was prepared under the direction of the Society of Arts, and presented to the House of Lords by Lord Westbury, and, having been read a second time, passed into Committee. Although photography was included within the provisions of the Bill, either from oversight or want of special consideration of the special conditions appertaining to photographic portraiture, the provisions made were especially unfair and injurious to photographic portraitists. The copyright in photographic portraits was vested in the sitter as soon as he had paid for a single copy, and the portraitist was subject to heavy penalties if he disposed of in any way, or even exhibited, a single copy of such portrait without obtaining a legal assignment of the copyright. The subject having been brought under the attention of the Photographic Society, a committee was appointed to watch the Bill, and a communication was forwarded to Lord Westbury pointing out the inequitable and inconvenient conditions imposed by the Bill on photographic portraitists, the Earl of Caithness, a member of the Council of the Society, being also asked to interest himself in the matter. The *Athenæum* states, with much regret, "that some members of the Committee considered it their duty to propose or support, and were enabled to carry such amendments in, the Bill, as denuded it of several of the most important provisions it contained," and hence it has been withdrawn for the present session. We have not learned the nature of the amendments in committee referred to, nor whether they concerned the provisions for photography; but, in any case, we regard the present withdrawal as matter for congratulation, as it affords time for more careful arrangement, effort, and protest upon the part of photographic portraitists. In our own view it would be a boon to photographers that their art should be altogether excluded from the provisions of the projected Act rather than that they should be subject to the conditions of the Bill just withdrawn. There can be no reason, however, why equitable arrangements, made with equal consideration for the rights of the photographer and the public, should not be included in the next Bill, and we cannot doubt for a moment that on a proper representation of the case to the Society of Arts, suitable modifications will be made in the next draft.

SPLIT FILMS PRODUCED BY BAD VARNISH.

We have recently had an opportunity of tracing a case of film splitting, of the most serious and irreparable kind, to its source, with a degree of certainty and precision which rarely occurs even to those most ardently devoted to photographic research. The study of what we may term photographic morbid anatomy has always great charms for us, as aiding us very essentially in prescribing for the prevention and cure of photographic disease; and when the promise of an opportunity of investigating an unusually well-marked and easily traceable case of film-splitting was added to the inducements to visit a studio a hundred miles from home, we no longer hesitated, but arranged for starting at once.

The establishment of our friend is one of the largest, best managed, and perfectly appointed in the world. Every appliance is of the best kind, every facility for producing and keeping negatives of the most undoubted excellence. Unusual care is taken in washing the negatives, so that no trace of fixing salt receives a chance of remaining in the film. In many cases, the negative remains soaking for hours in water, in order to be examined carefully, and, if necessary, re-intensified when the day's work is done. In all cases, the negative, after the immediate washing it receives at the hands of the operator, passes into the care of an assistant operator, by whom it is again well washed before it is dried and varnished. The finished negatives are carefully wrapped in blotting-paper, and stored in pigeon-holes in a dry room, and, until the case occurred to which we refer, no single instance of a cracked film had been met with in the establishment. The splitting we have to describe was not in a damp season, but during a period of long-continued dry weather. It will be seen, then, at the outset, that the case is *sui generis*, being freed from the ordinary circumstances of complexity and doubt as to whether a combination of usual causes had not been in operation to produce the annoying result.

The character of the cracks was as peculiar and unusual as the circumstances. They had, in some cases, something of the vermicular character, but in most instances formed an irregular network, the spaces or meshes being of various sizes, with areas varying from a quarter of an inch in diameter to half an inch or an inch, whilst in others they were so exceedingly fine as to resemble the kind of rupture or breaking of the surface caused by the drying and crystallization on the film of some saline solution. In some cases they resembled minute crescents detached from any connecting line; in others, they were like a continuous chain of crescents. In some cases, the cracks were confined to the background, leaving the figure intact; in some, they ran along the line formed by a dense part of the image; and in more they intersected the dense parts, such as the forehead and cheek. In a few cases they were taken in time, and found to have divided the varnish, only leaving the continuity of the collodion film perfect; whilst in others the film was split up from the glass, and completely exfoliated, in a few instances leaving scarcely a vestige of collodion or varnish on the plate. The defect was fortunately confined to the work of two or three weeks, permitting a close examination of the materials employed and the conditions present, the actual cause being thus tolerably readily isolated, and the lesson made pointed and exact.

The custom in the establishment has been to use a negative varnish of orange lac, which, although very hard and durable, had two drawbacks: one, the difficulty of re-dissolving it for occasional purposes, and the second, its non-actinic colour. The non-actinic colour chiefly became of consequence under certain conditions we must describe. In the establishment of which we speak the negatives are, as a rule, retouched in greater degree; accidental defects in the model—such as spots or freckles, or excess of wrinkles, imperfections in the lighting, causing want of pluck or brilliancy, or chance spots in the negative—are all removed or ameliorated by skilful retouching with water-colours, the aim being at all times, whilst retaining the literal truth of nature, to remove by art those scarcely perceptible blemishes in texture and colour which it is the tendency of photography to exaggerate, and so do violence to nature as well as to pictorial truth. The retouching in water-colour was applied to the varnished surface, and, when completed, a second coating of lac varnish was applied to protect the retouching, and prevent its tendency to combine with silver and become black and coarse. The second coating of the lac varnish, although a very thin one, had, at times, a tendency to accumulate around the lines of retouching, and then its non-actinic colour became appreciably injurious, showing definitely in the print. These two defects in the lac varnish, notwithstanding its other good qualities, rendered its use undesirable, and it was resolved to abandon it.

Another varnish, nearly colourless, was recommended and adopted. This varnish simply consisted of gum sandarac dissolved in methylated spirit. As the result of very considerable experiment with resins, we could have predicted the unsuitability of this varnish at the outset. We know sandarac to be an exceedingly friable and untrustworthy substance when used alone for a varnish; but of this more by-and-by. The varnish looked well, being bright and colourless, and was used in precisely the same way as the lac varnish had been. In the course of a week or two after commencing its use the negatives began to split in the manner we have described. In some instances, when a few initial cracks were noticed, the whole film, even whilst under examination, suddenly exfoliated, leaving scarcely a shred of film on the plate. In a few other cases, when the incipient cracks were noticed, the application of alcohol to remove the resin, and re-varnishing with another sample, saved the negative. The facts were as inexplicable as distressing, and, in the first instance, no thought of blame was attached to the varnish. The condition of the bath and of the collodion was examined, the mode of development was overhauled, the fixing and washing operations carefully examined; but in each instance these were found to be the same as heretofore. The mode of intensifying usually employed—that with iron and citric acid—was known, when pushed far, to give a tendency to the film to become horny and leave the glass, and, on the supposition that it might possibly aid in the splitting, it was abandoned, and intensifying with pyrogallic acid tried, but with no cessation from the destruction of films. All other possibilities having been exhausted, the varnish was put on its trial, by trying other varnishes side by side with it under precisely the same circumstances. Then it was that the guilt of the culprit was made manifest. In almost every instance where the sandarac varnish was used, especially if applied twice, the films split up; where the other varnishes were employed no single instance of splitting occurred.

Here, then, was absolute proof of the cause of splitting: the use of a contractile friable gum resin in the varnish: the fact that in this instance no mixture of resins was used preventing any doubt or possibility of divided blame. Gum sandarac is a somewhat tempting resin to use, being cheap, easily soluble in alcohol, and comparatively colourless. It is, however, a thoroughly untrustworthy resin for negative varnishes, being soft, friable, and thoroughly without tenacity or toughness. We record this practical proof of its unsuitability as much for the benefit of manufacturers and dealers as for that of operators. As a rule, we do not recommend photographers to make their own varnishes, as much more knowledge and skill in the selection and varied treatment of gum resins is necessary to success than the majority of photographers can possibly possess. If sandarac be used at all, it should only be employed in conjunction with some essentially tough resin, such as benzoin, with probably a little shellac as well. Experienced varnish-makers generally understand the need for combining resins, but for negative varnishes let them beware of excess of sandarac.

Whether other cases of cracking in films—where the history of materials and conditions is not so easily traced—may in like manner be due to bad varnish or other causes it is difficult to say; but the history of one well-traced and perfectly verified cause cannot fail to be suggestive and instructive.

PERMANGANATE FOR INTENSIFYING.

The method of intensifying negatives by means of permanganate of potash, which we proposed nearly twelve months ago, has been tried tolerably extensively, both in this country and on the other side of the Atlantic, and generally with success. In a few cases, however, of which we have heard, difficulties have been experienced, and, as the same troubles may have been encountered by others, it may be useful for a moment to glance at the causes and remedies.

The first difficulty we heard mentioned was the formation of stains of uneven intensity. The cause was easily ascertained. The defect was the result of pouring on the plate a concentrated solution of the permanganate, instead of following the instruction to immerse the plate in a bath or dish containing a somewhat dilute solution. It is often difficult to cover a plate satisfactorily by pouring upon it any strong solution of an active agent, especially if the surface be large. The solution commences to act most vigorously at the point where it first touches the plate, often making a distinct patch there, and, as it gradually flows over the plate, it becomes weakened, producing less effect towards the edge, even if no ridges are formed from checks in the flow of the wave. Immersion in a dish of the solution removes all such risk.

A second difficulty we have heard mentioned has been the formation of an uneven deposit, even when the plate was placed in a bath of the solution; the uneven deposit producing hard, patchy lights, and scarcely at all strengthening the half-tones. This is due to a short immersion in a strong solution instead of a longer immersion in a weak solution. In our own experience we have used both a five-grain bath and a ten-grain bath with success; but when we have met with the tendency to this quick formation of a heavy deposit on the dense parts, we have found that reducing the strength and increasing the time of immersion at once removed the trouble.

A third trouble is pointed out, and the remedy indicated, by our friend Professor Towler, in the *Philadelphia Photographer*. He says:—

“There is, however, a drawback in the original process, and one that would deter the photographer from its use; in fact, I saw one of our fraternity throw down the negative in a passion after he had intensified it to perfection, and was immediately before in ecstasy. The drawback is this: the deposit, the colouring matter, or whatever else it may be that forms the intensity, is soluble in the alcoholic varnish, which sometimes leaves the picture utterly useless.

“But this drawback is easily remedied, and then the intensifier is just all that can be desired.

“Immediately after the proper intensity has been attained the plate is carefully washed. and then finally coated, whilst wet, with the following solution :—

Gum arabic (picked)	... ...	10 grains
Rain water...	... ...	1 ounce.

"The plate is then dried before the fire, or near a flame, and then the regular coat of varnish is applied in the usual way. The intensified film is not at all changed after the gum has been applied, and for a very good reason, gum-arabic being insoluble in alcohol.

"Permanganate of potash, therefore, applied as directed, is one of our best intensifiers, and is worthy of recommendation."

Foreign Miscellanea.

M. Lacan, in the *Moniteur de la Photographie*, passes in review the principal works exhibited at the Paris Photographic Exhibition. He states that, in the same way as the collodion process was an improvement upon Daguerreotype, permitting the production of a certain number of copies from one plate, where before a special operation in the camera was necessary for every picture, so mechanical printing, which allows of the multiplication of the original to almost any extent, is again another step of progress. Specimens produced by silver printing are, indeed, in the minority at the Exhibition, the greater portion of the walls being covered by photo-engravings and lithographs, pictures upon enamel and porcelain, carbon prints, &c. Some heliochromic photographs are shown, both upon silver plates and upon paper, by MM. Niepce de Saint Victor and Poitevin, but these do not appear to be endowed with any special novelty. In carbon printing, MM. Soulier and Braun seem to have most distinguished themselves, the former gentleman exhibiting pictures taken by a new and very rapid dry process much exceeding in sensitiveness the ordinary wet plate process. A picture of the square of St. Peter's at Rome, taken by a lens with a focal length of one metre, is said to have been secured within the space of two seconds; in so short a time, in fact, that figures in motion may be observed in the picture. Specimens of M. Jeanrenaud's modified process, as described by that gentleman a short time since; pictures by M. Despaquis on paper, wood, and painter's canvas; as likewise photographs of the new methods of MM. Marguet and Dauphinot and Mr. Edwards, are mentioned as well worthy of inspection.

A method of renovating gutta-percha dishes and utensils is communicated by M. Ludovico de Courten in the *Moniteur*. He first recommends thorough washing with water, to remove any trace of old solutions. and then the introduction of a mixture of equal parts of benzine and alcohol at 36° in sufficient quantity to cover the bottom of the dish. This mixture is allowed to wash round the sides of the vessel by inclining the same backwards and forwards. The liquid is then withdrawn, and the sides and exterior afterwards varnished with a soft brush, care being taken not to touch the bottom of the dish. After being allowed to dry for half an hour, the vessel will have recovered its former new and brilliant appearance.

In MM. Davanne's *Annuaire Photographique* for 1869 there appears an interesting essay, summing up the various theoretical researches and opinions which have, during the past few years, been advanced in connection with the formation of the photographic image; among others, the conclusions arrived at by M. Becquerel, Dr. Vogel, Mr. Spiller, M. Morren, &c., are stated and discussed. This is the fifth annual issue of M. Davanne's publication.

The whole of the details of M. Ducos du Hauron's process of printing in colours, of which an abstract has already appeared in the News, have now been published by the author in the form of a pamphlet.

M. Schrank passes a favourable opinion upon M. Ost's Circular, and gives lengthened abstracts from it in the *Correspondenz*. It appears that in the preparation of his collodion paper M. Ost recommends the admixture of a considerable quantity of white pigment.

MM. Goupil and Company, at Paris, are largely employing the Woodbury process in preparing reproductions of paintings. The process has been found to be exceedingly well adapted for this description of work, and so quickly and effectively is the printing now carried on that cabinet pictures are capable of being turned out at the rate of 160 francs per thousand.

M. Strolberger, of Munich, recommends the coating of silver goods and ornaments with a film of collodion much diluted with alcohol, the metal being slightly warmed previously to the application. By this means much saving is effected, both in the labour of cleaning, and in the material itself, as the surface never becomes corroded.

It has been decided by the Dutch authorities that at the Groningen Photographic Exhibition the following awards should be made; viz., three gold medals, twelve silver, and ten bronze ones, of which five of the silver will be for photographs of plants, animals, microscopic objects, &c.

A permanent photographic exhibition is to be established in Berlin, under the auspices of Dr. Stolze. The necessary capital has already been subscribed, and the possession of a suitable building will be ensured. The charge for space will be at the rate of six shillings per square foot.

Owing to further complications between the two Berlin Photographic Societies, Dr. Vogel announces, in the last issue of the *Photographische Mittheilungen*, that that journal will in future appear only as the official organ of the new Berlin Society, the *Verein zur Forderung der Photographie*, and that the doings of the *Photographen Verein* will no longer appear in its pages.

A discussion took place at a recent meeting of the new society in respect to a collection of Albert pictures forwarded for the inspection of the members. The opinion expressed was to the effect that the process seemed more favourably suited for the depiction of architecture than of portraiture.

M. Hammerschmidt, a Berlin photographer, communicates the fact that he has been enabled to obtain a photograph of the Holy Sepulchre in Jerusalem by the aid of reflecting mirrors, in the manner suggested by Dr. Vogel, and carried out by that gentleman in Egypt.

In America, Mr. Walker, of Buffalo, and Mr. Notman, of Canada, are executing pictures on the Adam-Salomon model; in Prussia and Austria this style of portraiture has failed to enrol any disciples.

M. Hans Hanfstaengl, the well-known Dresden and Berlin photographer, contemplates the formation of a permanent photographic exhibition in Berlin, to which a bazaar will be attached for the sale of photographic productions. This exhibition will be quite distinct from that proposed by Dr. Stolze.

The production of a new description of photographic caricatures is described in the *Photographische Archiv* by M. August Linde, of Gotha. The monstrosities M. Linde is able to produce are indeed fit companions to the spirit pictures—doubles, many-headed, and headless mortals already brought into being by the "black art" of the photographer. By placing in front of the sitter a convex mirror, and securing the reflection therefrom by means of a camera placed behind the background (a small opening being made in the latter for the insertion of the lens), a representation of the photographee is obtained, deformed to any extent, according to the angle of reflection at which the mirror has been placed. Thus large-headed, long-legged, and other malformed figures may be produced. The background must be somewhat dimly lighted, in order that the aperture in the same may the more easily be touched out on the negative, and the mirror must be perfectly bright and clean. A large bottle mirror answers the purpose very well.

In answer to a correspondent, Dr. Liesegang states that thallium-collodion would be somewhat difficult to prepare, owing to the difficulty experienced in dissolving iodide of thallium; one grain of the latter requiring thirty-eight pounds of spirits of wine to dissolve it.

Hyposulphite of soda is stated to be an excellent cleaning medium, if used in washing, in place of ordinary soda crystals; it has not the same detrimental effect upon the fabric as carbonate of soda, although it is equally efficient as a bleaching material.

Dr. Vogel promises shortly to present the readers of the *Mittheilungen* with specimen prints of the Woodbury and Albert processes, and likewise with a study of Reutlinger's.

M. Remele announces the publication shortly of a handbook on Landscape Photography (Oppenheim, Berlin), illustrated by a specimen of his work.

M. Tronquoy publishes a paper upon the application of photography to the preparation of maps. The process he describes is that pursued at the Ordnance Survey Office, Southampton, his communication forming part of the Report upon the French Photographic Exhibition.

MASKS AND FACES.

BY PROTAGORAS.

Part III.—What Constitutes a Good Operator?

Still carrying out my idea of producing pleasing portraits, I feel induced to ask the question, What constitutes a good operator? It will shortly be seen that I demand more qualifications than are usually considered necessary. The ordinary answer would be, that he is one who can place a sitter in an easy position, and take a sharp, clean, well-modelled negative. These qualifications are not enough to satisfy me. If he cannot do more, he is but an ordinary operator. By such ability he can produce " likenesses," and these may be fine photographs, but unless he have other and higher qualities in addition, he cannot produce good and characteristic portraits. If sitters were cold, hard, soulless models—mere dumbies—then to place them well and take clean negatives might constitute a fair operator; but seeing that they are something else, I demand that my " good operator " shall be able to recognize the necessity of duly representing this " something else," as distinguished from the mere flesh and blood and clothes of his sitters. I have already alluded to this something else under the terms of " character " and " expression." It was to qualify a person to rapidly judge of character and expression that I formerly said that every operator should be a " physiognomist."

I fancy I hear some one ask, " How many qualifications are required to make a good portrait photographer? It is admitted he must be a chemist, an artist, and understand the nature of light, as well as the laws of optics; and in addition to all these you now say that he is to be a 'physiognomist.' " I own the conditions of excellence in first-class photographic portraiture are exacting, but I cannot help it; I do not make them; I but point them out. In fact, I know of no profession where the demands on varied knowledge are so great, or into which other experience may be so readily and profitably blended. That an acquaintance with the arts and sciences should be useful is obvious enough; but I wish to insist on the recognition of another kind of knowledge—a kind of knowledge that is not often admitted to be knowledge at all—the every-day wisdom acquired by the man of the world. I want it to be understood that it is part of the qualification of a good operator that he can " reckon up " his sitter; that he can give a shrewd estimate as to his peculiarities of character, so as to assist him in taking a portrait. This ability to judge of persons by their exterior is " physiognomy," and, more or less, we all understand it, and are guided by its dictates. It is not difficult to judge, by a man's looks, his carriage, his tone of voice, his general demeanour, whether he is a proud, a vain, or a studious man; whether his life is spent out-doors or in-doors; whether he is a gentleman, a tradesman, or a clown. The same is equally applicable to ladies. Perhaps their characters are more obvious—at least, so far as applies to the treatment necessary in sitting for the portrait. I know one clever operator who looks at—I was going to say, almost *through*—the sitter directly he or she comes into the studio, and the appreciation of character at once suggests, not only the appropriate position and adaptation of accessories, but also the proper expression that should be given on the face. I also know too many other operators who treat all their sitters the same. These men have a few stereotyped positions, and, grave and gay, old and young, rich and poor, are all treated the same. It cannot be surprising that such operators do not obtain characteristic portraits, seeing that they do not recognize character as a necessary portion of the portrait. It may be there, or not, as accident may determine; they only seek for a good negative; that obtained, they consider their work fully accomplished.

To know how to take a negative and to pose well are only the elements of an operator's business. Until he can do these he can scarcely be called one. This knowledge corresponds to what a youth learns during his apprenticeship to a trade: he must show that he can apply this knowledge skilfully before he merits being called a good workman. And if this be true of a mere trade, how much more does it apply to a profession whose aim is to represent the " human form divine "! Shakespeare graphically described all the world as a stage, the men and women as mere players. In such manner I have referred to the photographic studio as a miniature world—the photographer's works as the world's portrait gallery. This figure will not apply unless the *characters* are shown as well as the mere forms. It is frequently said that photographers fail because they are not sufficiently imbued with the principles of fine art. They fail sadly, I know, for the want of these principles, but the knowledge I am craving for is of a different kind. The vital elements of Art are beauty and truth. Art uses truth as the basis on which to erect its superstructure of beauty. Truth is but a means, beauty is the end. Unless beauty be present, art has no existence. It is different with photography. Truth is *its* guiding, governing principle. Beauty may be present—the beauty of truth—but it is not a necessity. It is ever desirable to have its presence, but its place is subsidiary. By all means let it gild, grace, and adorn, but never let it be forgotten that the sterling strength of photography rests in its truth. It must be not only the truth, but " the whole truth."

And now to the application. A sharp, energetic man comes to me for his portrait, and if, while I am arranging my camera, moving my blinds, and adjusting the head-rest, my sitter falls into a dull and listless mood, and I so portray him, though I may accurately represent the form of his features and the cut of his coat, yet, not catching his keen expression, I at best do but make a " mere likeness." I miss the real portrait; I tell the truth, but it is not " the whole truth;" and the proverb says that " half the truth is often a whole lie." To avoid so gross an error I wish my " good operator " to be a judge of character—a physiognomist—so that he may know what he wants, and what should be produced in addition to the mere form and features.

Of course I take it for granted that every operator has average ability of producing good mechanical photographs, and that he educates himself to perceive the change that takes place in different faces according as the light is allowed to fall on them. Nearly every face has a character of its own, but if the operator will take the pains to observe, he will discover that certain general types are constantly being repeated; though the varieties are endless, the type is the same. The treatment that is found best for a face of one mould will suit another face if it be of the same type; but directly the type changes it will be necessary to change the treatment. Take a well-marked example: a face in which the cheek bones are strongly marked. This face will also have prominent eyebrows, and deep-set, and usually very small, sunken eyes. There will also be, more or less, sunken cheeks. Now if the light be arranged so as to fall vertically, all these features will be very much exaggerated, and the portrait be an objectionable caricature. For such faces a side light will be infinitely the best. Another type of face, when the features are very prominent, will be offensively rendered by the light being principally from the side; while another class, with deep-set lines and wrinkles, will be best treated by an almost front light. But what is true of one of the type will be true of the whole. But it is not only in the physical characteristics, but also in the mental, that the operator's knowledge of physiognomy will be useful.

The first business of any science is to classify and range under different grades the portions of the subject it treats of. Physiognomy ranges mankind under types and classes, just as a photographer separates his negatives or arranges his lenses according to their peculiarities. In like manner the operator may class his sitters, and adapt his treatment according to the particular type. By adopting this method, his work will be more agreeable to himself, less laborious in practice, and more successful in the end.

Although a man may be very skilful in judging character and obtaining good negatives, there are many other desirable qualities in a good operator that have not even been named. He must have great patience, good temper, pleasant manners, considerable tact—to say nothing of the capacity of going without his dinner. These points I shall reserve for another occasion.

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 2.—Salomon Prints.*

The successful verdict pronounced on my recent experiment by our respected Editor encourages me to hope that with the assistance of a little dodging similar results may be obtained from a negative now before me, despite the unpromising conditions it presents when the plate is viewed by transmitted light. To describe the defects in the shortest way, I had better print off a proof, which, I venture to predict, will show up the usual defects that characterize an under-exposed negative, viz., the detail of the drapery terminating abruptly on the verge of the deeper shadows. If deep printing is attempted, the eye on the shaded side of the face will be lost, whilst its opposite companion will appear lustreless, or what some folks call "fishy." Most of the detail observable in the chin by reflected light will, in the print, appear "conspicuous by its absence." In short, take it all in all, the negative on which I purpose operating is decidedly un-Salomonesque. A little Indian ink, however, is capable of working out wondrous transformations; I therefore invoke its aid, to enable me to change this bad object into the most tractable of subjects.

First, the eyes must be seen to. A few steady strokes of the brush, and death is made life; twin dots opposite, and lustre is restored; a minute or two expended in carefully stippling over the chin shadows, and the under lip is more naturally projected. And now for the drapery. With much caution the detail must be drawn into the shadows, care being observed that the markings are made more suggestive than minute, otherwise we produce a work of patching, rather than a thing of beauty. The chair and all minor points we treat in like manner, and, as the best means of judging the merits of our performance, we must proceed at once to print off proof the second.

A word of digression. To enter here on the subject of "touching" in other than general terms would break the thread of my narrative; I shall, therefore, postpone minute and practical directions until the completion of this chapter. At present I must decide, from the appearance of the proof print, whether further touching is requisite. On viewing this test-picture I perceive that some of the brush-work is registered too "loud." This obtrusive element the tip of my finger subdues; and the brush is once more set to work to strengthen such portions of the negative as need additional force. This accomplished, I proceed to strike off what I anticipate will be the final proof, by placing the frame in a brightly diffused light.

To shorten what must otherwise be a long story, we will suppose the print turns up satisfactory. We therefore continue operations by first toning down the chalky face, together with each defective part of similar whitewash "glare." These manipulations to which I make allusion can be executed in various ways; a brief description of each I proceed to state.

1st. If sunning subjugation is objected to, the print may be taken upon pink tinted paper, which would render suntinting unnecessary. Objection: those parts which should be left white would be tinged with the pinky hue of the paper.

2nd. Before proceeding to print from the negative the paper may be slightly tinted by exposure to light. Objection as above renders this method also undesirable.

3rd. The highest lights—such, for example, as the collar, wristbands, lace, &c.—might be protected by a brown paper mask, and the remainder of the image exposed to diffused light. Objection: the face, under such treatment as hinted at, loses force by the reduction of the prominent lights which give vigour to the features.

4th and last. The dodge I now particularize in broad detail is, in some points, similar to one which has already been published by a gentleman whose name I cannot at this moment remember. To him, however, I freely yield up all honours due to precedence of publication. Albeit, I have not copied the method from his instructions, having practised the dodge with unqualified success from the time I first conceived of it, viz., about three years ago. The particulars are as follows.

When the proof is removed from the frame, place it on a light and thin board. On the print lay a sheet of glass, in size at least equal with that of the print. This preliminary completed, with pigment or ink and brush proceed to stop out the prominent lights of the head and face, such as the light spot on the forehead, projecting portions of the face, tip and ridge of nose if required, &c. Then the eyes must be looked after, also the linen, together with any other points that should retain their pristine purity in the finished picture. The print must then be exposed to a very subdued light, and carefully watched, in order that the printing may be immediately stopped when the requisite depth of tint is perceptible. When a Salomon print is desired, it is requisite that the deepness of tint must harmonize with a comparatively dark background. In the subject on which we are (imaginatively) engaged, the negative has given us a very light background, which we reduce and graduate by adopting such means as I have before described. When completed, if our modifications have been skilfully conducted, our print presents no traces of hardness, and we have a round, vigorous, brilliant—in short, a very presentable—Salomonesque picture, which we carefully tone, fix, and wash in the usual way. And whilst the washing is going on, we shall once more engage in experiment, this time on a negative of forty prints an hour however, which number my experienced readers will admit an extremely thin negative is capable of yielding when printed from in bright sunlight. Up to the printing off the final proof the kind of negative alluded to requires similar treatment to those I have already dealt with, but here the similarity ends.

When all is ready for printing, ere we seek the aid of actinism, the glass of the printing frame must be prepared to play a part in the operations, by applying a thin coating of india ink where the portions of the negative beneath need protection from the light. If the face is very thin, a little of the pigment stippled at the back of the negative would improve results; and should it so happen that the background is very transparent, around the outline of the head and about an inch beyond it should also be protected with a stippled coating of the ink, and the remainder of the background, which requires to be kept light, may be screened with a coating of ink, to be applied on the outside surface of the glass belonging to the frame, due regard, of course, being paid to the conditions requisite to make light graduate into dark.

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* Continued from p. 332.

These matters attended to, the frame may be placed in a very dull light, under a chair, table, or other projection that can shield from direct light. The printing might occupy several hours. No matter. Remember that the tortoise won the race. First in order the shadows will print; and when a subdued light is selected for printing, it is really remarkable how deep those shadows will be impressed before the lighter tones move to any appreciable extent. We must, however, watch progress, and should the high lights threaten printing through before the drapery, &c., are sufficiently deep, block out the portions that need protection by applying to the glass of the frame a touch of completely opaque colour; and if this operation is skilfully performed, the spots so covered will cease to print, yet exhibit no signs of local and forced stagnation. With this remark I need only add that the unprotected portions of the background will, as a rule, print sufficiently deep to render subsequent treatment (as needed by the former examples) unnecessary.

(*To be continued.*)

THE COLLODIO-CHLORIDE PROCESS WITH AMMONIA VAPOUR, AND MEZZOTINT PRINTING.

BY A. DE CONSTANT.*

The beautiful picture upon collodion paper which you recently sent me testifies to the efforts you are making to popularize this particular method of printing.

The reception of this specimen was, moreover, a source of gratification to me from the fact that I have studied and practised the Simpsontype process to a considerable extent, and found it possessed of many advantages. It is applicable in every studio; it effects a saving of much time and money; and is, according to theory, possessed of the most certain keeping qualities. Its chief characteristics are, extreme clearness and softness; and the only disadvantage inherent to the process, and shared likewise by the Leptographic and Wothlytype papers, is its want of depth and vigour.

To overcome this defect, I have lately tried the treatment of collodion paper with ammonia vapour, and the results thus obtained are, in truth, surprising: pictures prepared in this manner are vigorous, deep, and possessed of a rich and harmonious tone. The remedy is, in fact, so simple and effective, that when two prints are placed side by side, the one printed with and the other without the aid of ammonia, it appears scarcely credible that the two proofs could have been obtained from one and the same negative. The ammonia has the effect of imparting a dull gloss to the pictures, which are thus made to appear in many respects like carbon prints.

It is hardly to be credited that the treatment of collodion paper or the collodio-chloride film with ammonia vapour has not before been thought of; at any rate, I have not yet seen anything in reference to it in print. Difficulties have not in any way beset my path, but as in photography it is never wise to shout victory too soon, I should be glad if you would kindly repeat my experiments, and likewise let me have your opinion upon the results forwarded to you.

It is worthy of remark, that with the use of ammonia vapour, negatives of every description may be used for collodio-chloride printing, a circumstance which is by no means the case when printing upon simple collodion paper.

I still use Simpson's old formula, and find that the nature of the chloride salt exerts a great influence upon the tone of the picture. By the employment of various kinds of chlorine salts I have been enabled to secure every desired tone. Chloride of magnesium yields principally a grey tone, chloride of calcium a brown tone, chloride of cadmium a violet-black tone, chloride of strontium a lively sepia tone, and chloride of lithium a bright rosy tint. It becomes, therefore, but a matter of detail to mix the collodion in such a manner that a certain tone may be insured. When the tint of the photograph is not to be changed during the toning process, it is well to use an old and weakened alkaline gold bath.

As a support to the collodion, I never employ glazed or enamelled paper, as the latter produces prints which are not only inferior from an artistic point of view, but are likewise difficult to manipulate, and easily injured. The stout starch paper manufactured by Liesegang, of Elberfeld is what I prefer to use, and this is singularly well adapted to the purpose. By treatment with ammonia the pictures become sufficiently brilliant; or, if more gloss is requisite, they are simply coated with positive varnish. This latter has the effect of protecting the print in the most perfect manner, and likewise of imparting to it a brilliancy equal to that possessed by pictures produced upon enamelled paper.

At a time when the mechanical printing processes of Woodbury and Albert are threatening to annihilate altogether the modest silver process, it is important that efforts should be made to endow the latter with the qualities of softness and artistic excellence at present so favourably looked upon by the public. I believe that my proposed modification will bring about these results.

It is a matter of surprise to me that your excellent Journal* has not dedicated more attention to the mezzotint process of M. Meinerth. This process may not, it is true, be introduced everywhere promiscuously, but may, nevertheless, be regarded as a valuable method of utilizing very hard and vigorous negatives, which would, if printed in the ordinary manner, yield only worthless results. Till now but little reliable information has been given respecting the process. Simpson states that a sheet of thin glass should be placed between the negative and the prepared paper, and that the frame should be placed in an open box eight or nine inches deep, with blackened sides, to prevent the action of diagonal rays. After many experiments I have found it to be necessary to place the box (in which the frame lies) in such a manner that the rays fall directly upon the negatives. By means of a piece of chalk the locality of the box is marked, so that its position may be registered whenever the frame is withdrawn for inspection; and the box is, from time to time, shifted, to ensure its proper relation to the sun.

For insertion between the two prepared surfaces various substances may be employed; as, for instance, mica, collodion films, gelatine, &c. The most suitable for the purpose is, however, a very thin and pure sheet of glass, as films of the first-mentioned description are incapable of producing an effect of the requisite degree.

GOLD TONING BATH.

BY M. CAREY LEA.†

A correspondent of the *Photographische Archiv*, over the signature of J. P. S., proposes to modify the gold toning bath, which I sent you some time since, by substituting benzoate of ammonia for benzoate of potash, remarking that it is simpler to prepare. The objection to using the ammonia salt is, that its degree of alkalinity is very apt to vary. The combinations of these organic acids with the volatile alkali, especially the acid salts with which we have to do here, are apt to gradually pass, by keeping, into uncertain mixtures of acid and neutral salt. It is possible that such a mixture may answer equally well, but there is an uncertainty about such combinations that is disagreeable. If the alkaline benzoates can be purchased, it is as easy to use benzoate of potash as benzoate of ammonia; and if they have to be prepared by the photographer, the same remark holds good.

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* *Photographische Archiv.*

* The *Archiv.*

† *Philadelphia Photographer.*

The formula, as given by the correspondent of the *Archiv*, is 1 grain of chloride of gold to each 2 ounces of water, and 4 or 5 grains of benzoate of ammonia. He does not state whether he used the neutral or the acid benzoate. It is a characteristic of this bath to give beautiful, warm, purple-black tones, and J. P. S. confirms this result, and remarks that the bath is very constant in its working. It has most resemblance, in its general characteristics, to the acetate of soda bath. The prints which it yields rank as high for stability as any. As some of your readers may like to try the bath as originally directed, I will briefly repeat the directions:—

Dissolve 40 grains of caustic potash in 2 ounces of water, and add as much benzoic acid as will dissolve; filter the liquid, and preserve it for use. For ten ounces of toning bath take ½ an ounce of this solution, and add to 5 grains chloride of gold.

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CAMERA FOR TAKING GLASS POSITIVES AND NEGATIVES NOT LATERALLY INVERTED.

BY PROF. JOHN TOWLER, M.D.*

A camera to take photographs without inverting them laterally—that is to say, without making right left, and left right—is a necessity.

How often is it necessary to get a photograph of a building, a public edifice, or a landscape, on the spot—that is, as quickly as you can take a tintype? On that account, with the ordinary camera such a picture would be inverted and unsaleable. It is equally necessary to be supplied with a camera to take negatives without inversion for the preparation of carbon prints by single transfer (Blair's process).

Now I will show you how to prepare such a camera at the least possible expense, trouble, and change:—

I suppose, of course, you have an extra camera with a complete set of plate-holders, from a four-fourth downwards to the smallest size required for given work, which camera can be spared and appropriated for the purpose in question. This being the case, unscrew the spring on the back lid or door, and remove it entirely; then, placing the largest shield or plate-holder in its place, but wrong side up, close the door, and, whilst in this position, screw the shield firmly and evenly fast to the door, so that when the latter is again opened it carries the plate holder with it. Cut out, now, two pieces of sheet brass an inch long and three-sixteenths of an inch wide; bore a hole an eighth of an inch from one end, and bend the brass into the shape of an italic *S*. Finally, cover the brass with india-rubber tubing as far as the hole at one end. Each of these pieces of brass so prepared is screwed at diagonal corners on the surface of the plate-holder, to serve as clamps for holding the plates on their respective glass corners, or to clamp the next sized plate-holder in its place. Each plate-holder is furnished with brass springs, alternately at opposite diagonal corners, so as not to interfere with those on the preceding or succeeding plate-holders. The object aimed at by covering the brass springs with india-rubber tubing is to prevent the decomposition of the nitrate of silver solution by contact with the brass.

The next thing to be done is to adjust the ground-glass in its new place by reason of the inversion of the plate-holders themselves. Take out the ground-glass, and select a piece of flat glass of exactly the same thickness as the ground-glass, and of a size suitable for the largest plate-shield. Place the latter in its position in this shield, and clamp it there. Now, with two flat rulers, ascertain the distance of the front of the glass from the surface of the front edges of the body of the plate-holder; this distance must be obtained with great accuracy.

This distance having been obtained, you next proceed to the adjustment of the ground-glass, which is inserted in its place, but with the ground surface looking in a direction opposite to that before—that is, looking from the lens. With the two flat rulers before used, and with the distance just obtained, you ascertain the position of the ground-glass, and then you build up accordingly with small slips of cardboard or of wood. This being done, the ground-glass is tacked in its place, and your object is accomplished.

You will observe, from the nature of the changes made, that the collodion film and the ground surface of the glass will stand at the same distance from the lens, a circumstance which is absolutely necessary; also, that the picture will be impressed on the surface of the collodion next to the glass, and not, as is otherwise the case, on the surface away from the glass. This very circumstance gives rise to a little trouble, unless you take measures to prevent it. The trouble is this: even the cleanest surface of glass is apt to institute a reduction or deposit of pure silver the moment the developer (protosulphate of iron) comes in contact with it, and thus what is called fogging commences between the collodion and the glass. This is obviated by first cleaning the glass thoroughly, and then coating with a dilute solution of albumen.

Secondly, the exposure must be slightly longer than when the picture is taken on the outer surface of the collodion, and when the rays of light do not have to traverse the glass that holds the collodion.

A transparent positive or ambrotype taken by means of this camera is not laterally inverted when the collodion film is turned towards the beholder, and if the picture is mounted on a piece of black velvet, you have a splendid representation of the object photographed; naturally, the film must be protected, either by means of another glass in front, or by a coat of crystal varnish.

It is surprising how very few practise this sort of photography, considering that there is nothing new about it, and that its advantages are really so marked. I am satisfied that any photographer might take out his photographic tent and a dozen handsome frames, and dispose of as many transparent positives of farmers' horses' heads on glass, handsomely done up on the spot, in one and every suitable day, and thus realize a handsome profit for his labour. People are apt to change their minds between the taking of the negative and the print, and sometimes forget to call for the latter if the former was not prepaid; whereas, by this process, they see the objects before them prepared on the spot, full of vitality, faithful in every point, they are delighted with it, and pay for it without a grudge, and hang it up in the place of honour in their parlours.

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ON THE WANT OF SENSITIVENESS IN DRY PLATES.

BY C. OMMEGANCK.*

Among the causes which tend to diminish the sensitiveness of dry plates may be enumerated exhaustion of the nitrate of silver; the contraction of the film, which, once dry, is incapable of again returning to its former spongy condition (thus preventing the formation of the picture within the film); and, finally, the greater transparency exhibited by the dry plate films. It is with this latter subject that we have at present to do.

By way of investigation, I prepared two plates with the same collodion and the same silver bath, and placed both, one upon the other, in a dark slide, inserting a few strips of paper at the corners, to prevent any damage to the films.

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* *Philadelphia Photographer.*

* *Photographisches Archiv.*

In this manner, both films were, one behind the other, exposed in a strongly lighted apparatus for five seconds. On development, the first plate afforded a picture in the ordinary way, while the other produced but a faint outline. The collodion employed was strongly iodized, and the film was, on that account, fairly opaque.

The experiment was repeated, with this difference, that the collodion for the first plate was only half as strongly iodized as that previously used, and capable, therefore, of giving a picture only half as opaque. The second or back plate was prepared with the same collodion as that used in the first instance. This time there were developed after exposure, upon the first plate, a weak image without sufficient detail, and upon the back plate another picture of almost like vigour.

In the third experiment a dry plate was placed in the dark slide, and upon this was imposed a strongly iodized wet plate. The dry plate furnished a very weak image, whereas upon the wet plate a perfect picture was developed, which had, of course, been produced wholly and solely by the light rays unabsorbed by the dry plate in front.

From this we may conclude that in order to bestow upon the dry-plate process more sensitiveness, it is necessary that less transparent films should be employed, whose opacity must, however, be produced by means of photogenic substances. It is possible that opal glass might be employed in this relation to advantage; the rays would, by these means, be reflected by the white backing, and their direct action would thus be strengthened. In using glass of this description for negatives, it would, of course, be necessary to transfer the collodion film.

The results of my experiments I have communicated, as I feel they may not be uninteresting in reference to the study of absorption of luminous rays, and its transformation into other forces.

When science has made further progress, it may not be impossible to ascertain exactly what becomes of the whole amount of light absorbed by a sensitive plate during a given period.

DEVELOPMENT OF COLLODIO-BROMIDE PLATES.

BY M. CAREY LEA.[*]

CARBONATE of ammonia has passed into very general use as the alkali for developing collodio-bromide plates when the alkaline development is used. The only other alkaline substance now at all in favour is dilute liquid ammonia. Both these substances are volatile, and, when a number of plates are developed at one sitting, the air becomes a good deal charged with the vapours.

Without regarding ammonia and its carbonate as being very unhealthy substances, I cannot think it very desirable to pass a considerable period of time exposed to their vapours. When ammoniacal fumes are dense, their action is decidedly noxious; they attack the blood through the respiratory organs, and produce a paralysis of the blood-corpuscules. Even in the more attenuated form in which the vapours may surround us during development they cannot be considered as otherwise than objectionable.

I hoped to find that potash, in the form of bicarbonate, might be made to take the place of ammonia, but was disappointed. I made the comparison very carefully. Two plates, identical in every respect, received an exactly equal exposure, the one following the other with the least practicable delay. Two developing baths were made of exactly equal strength, with the only difference that in the one the solution of ordinary sesqui-carbonate of ammonia was replaced by an equal quantity of a solution of equal strength of bicarbonate of potash.

The difference in the result was extremely striking. By the time that the plate developed with ammonia was fully out and finished, that treated with bicarbonate of potash only faintly showed the sky-line.

This treatment seemed also to have somewhat injured the plate. Although it was carefully washed off, and then treated with the regular ammonia developer, the plate did not come out fully as well as the other, which had been begun as well as finished with ammonia.

I therefore conclude that bicarbonate of potash is altogether inferior to sesqui-carbonate of ammonia as a developer for dry plates made with bromide of silver.

As it seems impossible to replace ammonia with an inodorous alkali, I can only suggest the necessity for good ventilation whilst working in this way. It is one advantage in dry-plate photography that the plates are generally densified at night, and that in pleasant weather the windows can be open to dissipate the ammonia fumes.

COLLODION VARNISH FOR PRINTS.—IODIZED COLLODION.—OBSERVATION ABOUT PRINTING.

BY PROF. J. TOWLER, M.D.[*]

A VERY effective and agreeable polish on glass is communicated to card or cabinet prints, &c., simply by coating them with a glutinous plain collodion. This polish is not so flagrant on the one hand as the so-called enamel surface, nor so dead as an ordinary albumen print that has undergone all the operations up to the mounting. I think I am justified in recommending the operation. Prepare the collodion as follows:—

Plain Collodion.

Alcohol	3 ounces
Ether	4 ,,
Pyroxyline...	42 grains

Dissolve and filter in the usual manner.

The prints are first cut out to the proper size, and floated on the reverse side upon clean water until they lie perfectly flat; then take one print at a time and place it on a piece of glass of the same size as itself, moist side downwards; it easily adheres to the glass. Let the excess of water drain off, and remove all moisture from the picture surface; now coat it with the collodion, and let it drain in the usual way; then dry it before the fire or in any manner which is most convenient. The operation is quick; and, it seems to me, the glass is just about right.

FORMULA FOR IODIZED COLLODION.

Now that the odious bromide patent no longer exists (thanks to the arduous labours of our Editor) but few photographers will think of using the following formula for a collodion that contains no bromide, but I can assure them confidently and in good faith that the negatives obtained with this collodion will vie honourably with the best bromo-iodized collodion. But little, and, indeed, frequently no intensification is required. For room work this collodion is all that can be desired. It keeps well, and, when newly made, is of a bright straw colour.

Alcohol	5 ounces
Ether	5 ,,
Iodide of ammonium	40 grains
Iodide of cadmium	20 ,,
Iodide of potassium	20 ,,
Pyroxyline...	60 ,,

Dissolve, and set aside in a stock bottle; when wanted, pour off, and filter, if necessary, the requisite quantity for present use. Add to each ounce of collodion six drops of carbolic acid, which decomposes the collodion slightly, and changes the colour to a reddish hue. As I said before, it will not be necessary to intensify much, if at all.

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[*] *Philadelphia Photographer.*

[*] *Philadelphia Photographer.*

Observation About Printing.

During cold weather do not heat your sensitized pieces of paper just before you place them in their respective cold pressure-frames, otherwise the paper will swell in contact with the cold plate, corrugate during the printing, and thus blur the picture.

In summer, on the contrary, warm the sensitized paper to the temperature of the negative; otherwise, when heated by the sun, the paper will contract, and thus produce about the same result as before.

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RELATION BETWEEN COLLODION AND DEVELOPER.

BY GEO. H. FENEMORE.*

There is nothing in the photographic dark-room that requires to be better understood than the proper relation between the collodion and developer.

The propensity of many photographers to stick to one formula for the production of the different compounds used in photography cannot be sufficiently condemned. For instance, with some, collodion should contain 5 grains of iodide and 2 of bromide to the ounce of collodion, to produce the proper amount of sensitiveness and intensity; with others, 4½ to 2½, and so on. I do not pretend to deny that the variation between the amount of iodide and bromide will affect the result in a material degree, but I do maintain that the general excellence of the negative and the amount of intensity will depend more upon the quality and quantity of the pyroxyline that is used in the production of collodion, some samples of cotton producing a weak and flat image, others again producing very strong contrasts.

The sensitiveness of the collodion will also depend more on the pyroxyline, than by any slight variation in the quantity of iodides or bromides. A collodion producing a weak and soft image is generally much more sensitive than one that gives considerable intensity. Consequently any set formula will be found—in general practice, at least—to be very unreliable; this may be proved by taking a given quantity of bromo-iodized ether and alcohol, dividing it into three equal parts, and to each part adding a sample of cotton from three different makers. Coat a plate from each, and expose and develop under the same conditions, and you will find that not only the quality of the negative, but the intensity of the image, will vary materially, and in some cases there will be a great difference.

The question, then, is not so much whether so many grains of this salt or that will be the best formula for general work, but what proportion of iodide and bromide is necessary, with the sample of pyroxyline we have, to produce the best results. With some samples of cotton, negatives can be produced with as much softness and detail with half a grain of bromide to the ounce as others will with 2½ grains. It is therefore very important, when making collodion with a fresh lot of pyroxyline, to make a few ounces first, and try it, in order to determine the relative quantity of each necessary to produce the best results. This being done, we must depend upon the developer to give us the right balancing between intensity and half tone, so necessary in all good negatives.

How, then, is this to be done? Certainly not by having a 15, 30, or 60 grain iron solution as a regular developer, for a good photographer will have no regular developer. He may have a general one, which he strengthens or modifies, in order to produce the result he desires, but an arbitrary formula for either collodion or developer, if adhered to, will only lead to vexation and disappointment in many cases where it might easily have been avoided. And this can be done where the nature of development is properly understood. If a negative is properly exposed, with a collodion giving moderate intensity, a developer ranging from 20 to 30 grains to the ounce will be found amply sufficient. If, on the contrary, the negatives are weak and flat, one-half the above strength will be sufficient. But should it be intense, double the above strength may be used with advantage.

As I said above, a collodion that gives a weak image with plenty of detail is generally very sensitive, and will bear a very weak developer, which deposits silver slowly; the parts, therefore, most impressed by light receive the largest share of the deposited silver, particularly if the plate is kept in rocking motion during development; and the more silver deposited upon the opaque parts of the negative, the more intense it becomes. A weak developer, therefore, tends to give intensity, and should be used with a collodion giving weak negatives.

A collodion giving strong contrasts should have a strong developer, for the opposite reason, that the action is much more quick, and tends to a more even deposit all over the negative, thereby preventing an undue aggregation of the particles of silver upon the parts of the negative most acted upon by light. In cases of extreme intensity, it may be still farther modified by a copious flow of the developer, and allowing part of it to run off, carrying with it a good portion of the free nitrate of silver.

This system of working does not entail as much trouble as it would appear upon paper, for all that is necessary is to have two bottles of developer, one containing 15 grains of iron to each ounce of solution, the other containing 60 grains to the ounce. These, by judiciously mixing a portion of each together, will make a developer of any strength you require, and by so doing you may get almost any character of negative you may desire. The whole matter, then, may be summed up in a few words.

First, make a collodion that will give you the most sensitive, at the same time not too intense, a negative. Then regulate the intensity by a judicious use of the developer, and you will find it much more pleasant and profitable than sticking to any one formula for either collodion or developer.

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ON THE FUNCTIONS OF NUCLEI WITH RESPECT TO GASEOUS, SALINE, AND VAPOROUS SOLUTIONS.

BY CHARLES TOMLINSON, F.R.S., F.C.S.

Under this heading our contemporary, the *Chemical News*, gives a report of a highly interesting lecture delivered by Mr. Tomlinson before the Pharmaceutical Society. We make some extracts, at once curious and suggestive, on the mode in which nuclei initiate crystallization in super-saturated solutions:—

"You know that when a bottle of soda-water is emptied into a glass, there is not only an escape of gas from the surface of the liquid, but innumerable bubbles become attached to the inner surface of the glass. A crumb of bread thrown into the soda-water produces a lively effervescence; and if we put into it the finger, a strip of paper, a rod of glass, of metal, or of wood, it immediately becomes covered with gas. In fact, any solid acts as a *nucleus* in separating gas from solution; and I would define a nucleus as a body that has a stronger adhesion for the gas of a solution than for the water which holds the gas in solution.

"Let us now take a glass that has been made chemically clean by being washed out with strong sulphuric acid or caustic alkali, and copious rinsing with clean water. If the soda-water be poured into this, the results are very different. After the first effervescence is over, the glass looks as if it were full of pure distilled water, not a bubble of gas is to be seen adhering to the sides, and there is no appearance of gas anywhere about it. I plunge into the liquid a glass rod that has been made chemically clean, or *catharised*, as it may be called: there is no escape of gas; not a single bubble adheres to the glass rod. I put in clean iron filings: there is no liberation of gas. I pour some iron filings into my hand and rub them about, and, on putting these into the soda-water, there is a furious, boiling effervescence.

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* *Philadelphia Photographer.*

"Hence, you see, there is a marked distinction between a clean or *catharised* body, and an unclean body, or *nucleus* as it may be called.

"The action of nuclei may be similarly traced in the case of certain salts that form super-saturated solutions. For example, 100 parts of water at 212° F. will take up 357½ parts of potash alum; whereas, at 32°, the water will take up only 3·9 parts, and yet the solution, saturated at 212°, may be cooled down to 32° without any separation of the salt, provided the vessel containing it be chemically clean, the solution clean, and means be taken to exclude the dust of the air. Such a solution is said to be *supersaturated*, because it holds more salt in solution than it can take up at the reduced temperature. In the case before us, a solution of alum, saturated at 212°, and cooled down to 32°, contains 90 times more salt in solution than it can take up at 32°. Here is a solution of alum, saturated at 194°, and containing 53 times more salt than the water, at 32°, can take up. You see it is a perfectly clear and bright solution, and may be shaken with impunity. It remains liquid and supersaturated simply because there is no nucleus to start the act of crystallization. I take out the plug of cotton-wool from the flask; and you see how beautifully the surface of the solution becomes covered with a crystalline crust, while well-shaped octahedra grow downwards, until the whole mass is solid, and the flask quite warm from the heat developed by the change of state.

"Here is a supersaturated solution of sodic sulphate in a narrow-necked flask. I take out the cotton-wool, and the solution does not crystallize: I touch the surface of the solution with a glass rod, and crystallization instantly sets in.

"Here are similar solutions of sodic sulphate and sodic acetate, each containing a solid, such as a bit of charcoal, of pumice-stone, of meerschaum, of coke, &c. These bodies, which would act as nuclei in inducing crystallization if put into the cold solution, become inactive if boiled up with the solution, and allowed to cool down with it and in it; they are, in fact, chemically clean. I take the cotton-wool out of these flasks: some of the solutions will crystallize on the instant; others after a short time; others, again, after some hours. It depends very much on the size of the opening whether a speck of dust enter the flask; for, of course, the wider the opening, the more likely is it for the dust to find an entrance.

"In the case of saline solutions, a nucleus may be defined as a body that has a stronger attraction for the salt of a solution than for the liquid which holds it in solution.

"In general, a body that has been exposed to the air, or handled, or wiped with a cloth that has been handled, is covered with an oily, fatty, or greasy film, to which the water of the solution adheres either not at all, or less strongly than does the salt of the solution; and hence such a body introduced into the solution acts as a nucleus. Make the body chemically clean, and the solution adheres to it as a whole; that is, there is the same amount of adhesion between the nucleus and the water of the solution as there is between the nucleus and the salt of the solution, and hence there is no separation.

"An extreme case of this kind of perfect adhesion on the part of chemically-clean surfaces and the solutions may be seen in this flask. It contains a highly supersaturated solution of sodic sulphate, resting upon a considerable mass of the modified 7-atom salt. This, being chemically clean, does not act as a nucleus to the rest of the solution. I can shake the flask violently, so as to break up and rattle about these crystals at the bottom, and the solution does not solidify. But now, look at this: I take out the cotton-wool, and instantly lines of crystals, closely packed together, diverge from some point on the surface, and the whole saline contents of the flask form one solid mass."

* * *

RECENT IMPROVEMENTS IN ELECTRO-METALLURGY.

So many of the processes of photo-engraving depend on skilful application of electro-metallurgic operations, that every improvement in that direction becomes of importance to a large class of photographic experimentalists. The following extract from the *Scientific American* will interest many of our readers:—

Herr Kress, in a treatise on this art recently published in Stuttgardt, Germany, describes a new composition (an invention of Herr Kress) for reverses or models of objects to be reproduced by galvanic action, from which a faithful cast in gutta-purcha cannot be obtained, as is the case with plates presenting landscapes, etched clouds, or other fine designs in relief or intaglio. While in other cases accurate reverses by means of gutta-percha can only be obtained by the application of pressure this is not the case with the composition of Herr Kress, which, in assuming a liquid state at a comparatively low temperature, allows the reproduction of all kinds of objects in a uniform manner at a cheaper rate and with less loss of time than heretofore known. In operating with the composition spoken of, it is necessary that the various objects should first be inclosed with a strip of potters' clay. This done, the mass is liquefied and poured over them, care being taken that the mass be not too hot, as in such a case its subsequent removal would probably be attended with difficulty. It is also indispensable that the original should previously be slightly greased. These precautions being taken, the moulds may, when cool, be quite easily lifted from the forms. The finest etched tones in *aqua tinta* may thus be reproduced faithfully and in a short space of time.

The moulds are finally rubbed over with fine graphite powder until they acquire a shining black appearance, when they are ready for the bath. The composition, however, is not quite as hard as gutta-percha, therefore brushes of the softest kind must be employed, otherwise the surface will be roughened and the work will have to be done over again.

The composition itself consists of 12 parts of white wax, 4 parts of asphalt, 4 parts of stearine, and 4 parts of tallow. These ingredients are melted together in the following order:—1, asphalt, as possessing the highest melting point; 2, wax; 3, stearine; and, finally, tallow. When the whole forms a homogeneous liquid, enough soot is stirred into it to impart to it a fine black colour. In order to give to the mass more body, and also to prevent its adhesion to the original, some plaster of Paris is mixed with it.

Moulds of this composition may not only be taken from medals, dies, and engraved plates, but also from plaster casts. In this case the latter are previously immersed in tepid water until thoroughly soaked, which will have taken place when the generation of air-bubbles has ceased. But another method may also be adopted. The plaster cast may be kept immersed in glue water, until, when withdrawn, a drop of glue water will not remain upon the surface. The original is in this case to be greased before cast, and if the glue water has been applied with a brush, which may likewise be done, the model ought to be allowed to dry. Substitutes for glue water are solutions of gum arabic and isinglass.

When the copper deposit has been removed from the mould the latter may be used anew; and in case it should ultimately become too brittle by use, it is only necessary to stir a small portion of tallow or yellow wax into the previously liquefied composition.

For small objects, as for coins and medals, a simple mixture of wax and stearine has proved to work perfectly well; but for objects of several inches diameter, such a composition would be useless, because the contraction which it undergoes is so great as invariably to produce fissures upon its face. Herr Kress, whose very valuable treatise we would like to see translated into English, furthermore states that, although all the known and recommended compositions for electrotyping were subjected by him to trial, he had not met with any which answered all purposes so well as the one described.

* * *

Correspondence.

MR. BEATTIE AND CARBON PROCESSES.

Sir,—I have been considerably perplexed by some remarks in the report, in your last, of the Bristol Photographic Society. I there find Mr. Beattie exhibited some of Mr. Pouncy's carbon prints, and indulged in considerable eulogy of that gentleman and his processes. With this no one could find fault, for, of course, Mr. Beattie has a perfect right to his views, however eccentric, and eulogy is always more pleasant than, and often quite as instructive as, detraction. It was not, therefore, what I conceived to be undeserved eulogy that perplexed me.

But I next find it stated that "he had scarcely referred to the methods claimed by Swan, Johnson, and Edwards, because they were complex, and were fettered from general use." Here, I must confess, I am altogether puzzled. I was under the impression that everything which Mr. Pouncy had discovered, or thought he had discovered, was doubly fettered from general use, all being patented, and, as much as possible, kept secret besides. On what principle, then, should the processes of Swan, Johnson, and Edwards be ignored or treated with implied condemnation for being patented, and

Mr. Pouncy's process praised, without any allusion to the fact that it was also patented? In relation to the question of complexity, I am scarcely less puzzled, inasmuch as in Mr. Pouncy's process, or processes, I am quite unable to discover any peculiar freedom from complexity.

But even whilst I am writing a grave suspicion enters my mind. I have been a constant student of the News, and have held the conviction that in it I found full information on every subject of interest connected with photography, and records of all discoveries, by whomsoever made, if they affected our art. Is it possible that a process of Mr. Pouncy's has been "burked," and that he has really discovered and given to the world, unfettered and unpatented, some process free from complexity to which Mr. Beattie refers? And is it further possible that the News has suppressed this process? If this hypothesis is not true, I must conclude that Mr. Beattie was strangely unfair and strangely oblivious of facts.

Will you oblige me with some hint as to what is the truth? And, whilst I am writing, may I further ask if the process of making the back of tissue temporarily transparent, in order to produce carbon prints without transfer, described by Mr. Swan two years ago, and then given to the public unfettered, and recently rediscovered and patented by Mr. Pouncy, becomes "fettered" by such patent, or whether it may be safely practised?—Very truly yours,

A Carbon Experimenter.

[All that Mr. Pouncy has done in carbon printing has been fully chronicled in these pages. We "burke" nothing of the slightest interest to photographers, from whatever quarter it may originate. The question of relative complexity in the various carbon processes is one which admits of diversity of opinion; and whilst we do not agree with Mr. Beattie that any of the processes of Mr. Pouncy are less complex or more perfect in result than the others named, we hold his perfect right to express his opinion on that point unchallenged. The condemnation of other processes because they were fettered by patent, and approval of Mr. Pouncy's, all of which are patented, seemed unquestionably unreasonable; but as the report with which we were favoured was a condensed one, it is possible that Mr. Beattie in some mode explained himself, so as to remove the inconsistency. The fact that Mr. Pouncy has recently patented a plan which had been previously published will in no wise fetter the process as regards public use; sufficient prior publication at all times invalidates a patent.—Ed.]

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Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Society was held on Tuesday, the 29th ult., at the Free Public Library, William Brown Street, the President, Mr. O. R. Green, occupying the chair.

The minutes of the former meeting having been passed, a general account was given of the two excursions that had been made during the month—the first to Hartford, on the 9th; and the second to the Valley of the Weaver, on the 24th ult.

Prints were exhibited as the results of these trips, but it seemed to be the general opinion that the first-named place did not offer any special inducements to photographers. The latter, however, not only afforded members a most agreeable holiday, but left much scope for future work in the same neighbourhood.

It was resolved, on the motion of the Rev. G. J. Banner, seconded by Mr. Wilson, that in future the Council should have the power of selecting the best photographs for the album, as a record of the excursions.

Mr. Frederick Pooley was elected a member of the Association.

A hearty vote of thanks was passed to Mr. Thomas Higgin for his kindness in providing a steamer for the Weaver excursion, and for his hospitality and attention on that occasion. The day had been a most enjoyable one in every respect, and a large number of photographs were taken, many of which possessed much merit.

Prints or negatives were exhibited by the following gentlemen, the results of the recent trips:—Rev. G. J. Banner, and Messrs. O. R. Green, Gough, Murray, and Guyton. Also views (10 by 12) of Gresford, and some taken in Derbyshire, by Mr. John Henderson; some taken in Welshpool by Mr. Guyton; and several transparencies by Mr. Roberts, comprising various subjects.

Mr. Roberts stated that he had used essence of coffee as the preservative for the plates in the proportion of two drachms of essence to two ounces of water, and this quantity he had found ample for two or three dozen stereos.

The pictures were much praised by the members, being clear, full of half-tone, and forming excellent specimens of printing on glass.

There was also exhibited a large instantaneous photograph (14 by 9), taken by Messrs. Robinson and Cherrill—a sea view, and which admirably depicted a flock of seagulls—which was greatly admired, an instantaneous photograph of such a size, with birds on the wing, never having been previously shown.

It was decided to have two excursions in July—one on the 7th to Chirk, Denbighshire; the other to Miller's Dale, Derbyshire, on the 21st.

Mr. Guyton drew the attention of the members to the parchmentizing of paper to produce permanence in prints, and read from the News the formula as given by Mr. Crookes, which caused some discussion.

The meeting was shortly after adjourned.

* * *

Talk in the Studio.

The Photo-relief Process.—We understand that the Emperor of the French, having seen Mr. Woodbury's printing process in operation at the Exhibition in Paris, was so much interested as to send his Chamberlain for fuller information to Messrs. Goupils, the holders of the French patent, and also requested the Count Aguado to call upon Mr. Bingham to obtain similar information.

The Sale of Poisons.—The new Pharmacy Act, whilst restricting the convenience of photographic dealers and others, does not seem to have rendered the purchase of poisons difficult. The *Medical Times and Gazette* says:—"As medical journalists we have nothing to do with the moral aspects of the Hosier Lane tragedy. But in the interests of the public we would ask how and where the man Duggan obtained the two bottles of Scheele's prussic acid with which he murdered his wife, his six children, and himself? We would ask of what use is the Pharmacy Act if such things are possible? Do all chemists, like Mr. William Vorley, believe that prussic acid is used in tin and silver plating, and sell it to any workman in those trades who signs his name in a book? If so, we can understand that the Pharmacy Act confers a comfortable monopoly on the Pharmaceutical Society and its members; but we do not see that in any appreciable degree it protects society or throws obstacles in the way of would-be criminals. The wretched man Duggan's condition probably justified the jury in finding him of unsound mind. Dr. Powel, of Newington Causeway, testified to his habitual despondency, and his morbid anxiety for the future. He was in the first stage of pulmonary tuberculosis.

Streaks in Negatives.—Dr. Woodward, writing to the *Philadelphia Photographer*, says:—"I have noticed a cause of streaking on negatives which I have never seen in print. The spring on the door of the plate-holder is so shaped that the two ends which press on the back of the negative rest flat on the plate, so as to arrest the solution as it flows downwards, causing a thin stratum of fluid from the two ends of the spring to the bottom of the plate. The reflection of light from this unequal distribution of the fluid causes the streaks. Remedy: Bend the spring in such a curve that it will rest two points on the plate."

Securing Reflected Light.—A correspondent of the *Philadelphia Photographer* says:—"No doubt all who have attempted negative making by a side light only are aware how difficult it is to light the subject properly, or without great contrast of light and shade. One side of the face is apt to be quite light, while the other is in deep shade. A white reflecting-screen alone on the shade side helps the matter only a trifle. The other day I was called upon to make a negative of a corpse. The day happened to be a bright one, and I overcame the above-mentioned difficulty in the following manner:—I selected a room where the sunlight could be admitted, and placed the subject near a window, and a white reflecting screen on the shade side of the face. As usual, the reflection from the screen was insufficient to equalize the light upon the subject, so I caused a pretty strong light to be thrown against the screen with a mirror, which caused an equal play of light upon the face, and an excellent negative was obtained without flatness. By varying the strength of the reflection from the mirror, the colour of the screen, and the distance of the screen from the subject, the above-named difficulty can be greatly lessened when sunlight can be had."

Marking Ink.—A German chemist, M. Kuhr, proposes a new method for marking linen. It is first saturated with a solution of one part of hypophosphite of soda and two of gum in sixteen parts of distilled water. The linen is then ironed, and, when dry, you write upon it with a quill pen charged with a solution of one part of nitrate of silver and six of gum in six parts of distilled water.

Another Method of Preserving Glass Baths.—Mr. J. C. Browne, writing to the *Philadelphia Photographer*, says:—"In using glass baths accidents frequently occur from the dipper striking the bottom of the bath, or else the plate slipping off the dipper; in each case the fracture of the glass bath may take place. These are accidents that frequently render useless valuable baths, also a liability to the loss of silver. A very simple plan has preserved a glass bath, subject to constant use, in excellent order for years. Cut a piece of pure rubber about the size of the bottom of the bath, about one-quarter of an inch thick, punch a number of small holes entirely through the rubber, and place in the bottom of the bath. The rubber will prevent all damage from jar, and the holes will be filled with sediment from the solution."

Tearing of the Collodion Film in Varnishing.—Now and then the question arises as to the cause of injury sometimes inflicted by the varnish upon the film, and, as the subject has again been discussed very recently, I here make known my own experience in the matter. It is usual to ascribe the evil to the too-concentrated condition of the alcohol used in the manufacture of the varnish, and this is, no doubt, in most cases, the case; but even with the employment of a dilute alcohol, the unpleasant result may be brought about—when, namely, the plate is rendered too hot previously to its being varnished. Everything depends, however, upon the description of collodion used, for with some kinds I have purposely overheated the plate to a considerable extent, and the latter has sustained no injury, while with negatives prepared with other materials a slight excess of temperature was sufficient to bring about their destruction.—*Philadelphia Photographer.*

To Correspondents.

J. T. Clarke.—The best mode of recovering the iron from cyanide fixing baths is to add it to the hypo fixing bath, and throw it down as a sulphide. 2. Beaufoy's acetic acid is much weaker than glacial acetic acid. By adding two ounces of water to one of glacial acetic acid you will obtain something like an equivalent of Beaufoy's acid. 3. When nitrate of soda, or nitrate of potash, is added to an iron developer containing acetic acid, a decomposition takes place, by which nitrate of iron and acetate of soda or potash is formed. Nitrate of iron gives bright, silvery images of a positive character.

One who Tries.—The quality which you call "sponginess" appears, from the example you enclose, to be partly due to the character of the lighting, and partly to the texture of skin in the sitter. The lighting indicates the presence of an almost uniform amount of diffused light all round the sitter, instead of having a strong light from one direction, with less light, either reflected or diffused, on the opposite side, to give a little detail to the shadows. From the evenness of the light, and the absence of shadow, there is a tendency to general flatness in the face, and anything like roughness in its texture or freckles is very definitely apparent. With a stronger direct light from one side you will secure more brilliancy and modelling, and less of the quality you call sponginess. It is probable that the pinholes were caused by excess of iodo-nitrate of silver, and by weakening your bath and causing a precipitate of chloride of sodium you have also precipitated the iodide salt. Whenever a precipitation of one thing is caused in a solution, there is a tendency for other matters, imperfectly in solution, to be carried down at the same time. But you must be making some mistake in supposing you added half an ounce of chloride of sodium to a pint of a twenty-grain silver solution. As one grain of chloride of sodium will (in round numbers) decompose three grains of nitrate of silver, with half an ounce you would precipitate all the silver in a pint of bath, and any kind of working, not to say good working, would have been impossible.

A Subscriber (B. B.)—Your right to build a studio in a garden, and to carry on a photographic business on the premises, entirely depends upon the terms of your tenure. As a rule, the landlord would have a right to object to your erecting a studio in the garden without consent; and, if the residence be a private house, he would have a right to prevent you carrying on any business in it. Your best plan is to try to gain the necessary consent by compromise, as you cannot act in defiance to your landlord's objection.

A. Muff.—You do not require an achromatic condenser. The simplest form of efficient condenser consists of two plano-convex lenses placed with the convex sides in contact. Another form, perhaps the best, consists of a double convex lens and a concavo-convex, convex sides in contact. An achromatic object glass will give you freedom from fringes of colour, and good definition; but it is not necessary for ordinary exhibitions. The size of the enlarged image is dependent upon the length of focus of the object glass, and the length of the room, rather than on the size of the lenses. You will best get the information you require by communicating with a trustworthy manufacturer. Write to Mr. How, of Foster Lane.

Novus.—Ferns may be printed on fabrics. You will find a method of printing on linen, &c., described in our Year-Book for 1858, page 98. The fronds should be carefully selected and dried, and then pressed flat on the fabric in the printing frame, treating the plant as a negative.

Orthodox.—Any good commercial sample of bromo-iodized collodion should answer: a thirty-five-grain bath just slightly acid with nitric acid. A one-grain solution of acetate of morphia should be used.

G. E.—Add the white of one egg and a little ammonia to half a pint of water, and beat up thoroughly. Then filter. This applied to the plate whilst wet will give you excellent results.

N. O.—The coarseness of deposit accompanied by hardness which you describe is doubtless due to under-exposure and over-development. The chief thing necessary to avoid the defect is to give full exposure. A bath in good condition, a ripe bromo-iodized collodion, and a simple iron developer of fifteen grains of protosulphate of iron and fifteen minims of acetic acid in an ounce of water, constitute all the requisites of good work. Of course, good lighting is a *sine qua non.*

Wolstenholme Brothers.—The lighting of the bust is, in some respects, pleasing; but it is a little too violent. A little more reflected light, preserving the same direct light, and a little more exposure, would give a very good result.

R. M. D.—We shall give the matter attention in good time, and report if there be anything valuable in it. There is no novelty in the discarding of acid conditions, and adopting alkaline conditions. In Mr. Batholomew's alkaline gelatine process, acid conditions were discarded. If we find the matter of importance, we shall duly and impartially report; if not, we shall probably not mention the matter further.

F. L.—Under-exposure in the negative is the chief fault in the enclosed print. The lighting may, however, be considerably improved; the excess of vertical light is the cause of the heavy shadows under the eyes, &c. Cover the sky-light immediately over-head, increase the amount of side-light, and use a white screen opposite the chief side-light, so as to secure a little reflected light on the shadowed side.

Henry S.—You will not improve your toning bath by adding more acetate of soda. The print you enclose is not so much bad in tone as wanting in vigour generally. The fault is in the negative, which is weak, flat, and thin. It is important to remember that no good tone can be obtained from a weak, poor negative. Sufficient vigour to permit deep printing and secure a good reduction of silver is imperative, if rich, warm, black tones are required.

The Gum Process.—M. de Constant, referring to the troubles of a recent correspondent with this process, recommends him to try Mawson's pure collodion alone, and to add to his solution of gum equal parts of coffee, made as follows: take water 150 parts, and pour it boiling on 15 parts of coffee, and white sugar 8 parts; well filter, and he will have no more annoyance.

Several Correspondents in our next.

Photographs Registered.

Mr. J. H. Bishop, Cheltenham,
Two Photographs of St. Mary's Church, Cheltenham.
Mr. Downer, Watford,
Photograph of the Prince and Princess of Wales Laying the Foundation Stone of the New London Orphan Asylum, Watford.
Messrs. Watson and Richards, Nottingham,
Photograph of State Bed Room, Clifton Hall.
Photograph of Dining Room, Clifton Hall.
Photograph of Chinese Drawing Room, Clifton Hall.
Photograph of the Cerise Drawing Room, Clifton Hall.

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FETTERED PROCESSES.

There is a singular misapprehension at times manifested in the minds of many photographers in relation to patent processes. They seem to regard the introduction of a novelty protected by a patent as a direct injury, an infringement of existing liberty and privileges; and they object on principle to any process "fettered by the trammels of the patent law." Now, as no process can become the subject of a patent which is not new, and as nothing which is already known and practised can be safely patented, it certainly does seem a little unreasonable to object to the new thing, which is generally an entirely new and increased source of pleasure and profit, simply because the person by whom it is introduced requires some slight share of the profit. The new thing would be a gain if the inventor required an equal share of the profits, whilst, in truth, he rarely asks or receives as much as five per cent. of the income to the photographer produced by the invention.* In any case, the use of the novelty is always optional, and the photographer who does not adopt it is in no worse condition than he was before the invention was made and patented. Nevertheless, a large number feel themselves aggrieved whenever a patent is taken, and straightway they protest against fettered processes. It would be just as reasonable to protest against the railway system, because the privilege of quick travel is fettered by the preliminary of paying for tickets.

A correspondent on another page harps persistently on this idea of "fettering" as an evil peculiarly irksome in relation to carbon processes, and is especially anxious to know the working details of such carbon processes as are "unfettered." We wish to point out to him and those of his way of thinking that their notions of fetters are much too narrow; that fetters are much more prevalent than they imagine or fully realize; and that, in many instances, patents constitute the least troublesome fetters of any in general existence.

There are three definite forms of fetters which have relation to photographic processes. They consist of patents, secrets, and ignorance; and the last is by far the greatest. Let us define what we mean by it. In speaking of ignorance as a fetter in relation to a photographic process, we presume the process to have an existence, either embryotic or more or less matured, but its possibilities are not worked out. No one knows exactly of what it is capable. It probably lies in a groove out of the common track; and to make it valuable some one must specifically devote time, skill, and money to developing and perfecting the initial idea. It may be very valuable when all its details are mastered and understood, or it may, perchance, prove worthless. But no one is likely to work it out without some chance of reward for his labour. Such a temporary monopoly as the patent law gives him is the legitimate temptation to cultivate the field, and give a valuable form to that which was before useless because unknown, or worthless because not understood. Our correspondent who asks for information in relation to unfettered carbon processes admirably illustrates this position. He asks for information which, in the fullness and completeness which he desires, does not exist, simply because it has not been the business or interest of any one to bring it into existence. Information on the detailed operations by which successful results may be secured can only be obtained by absolute work of a practical character, and men do not undertake such work without some hope of profit in their labour. If the experience had been gained, the fetters of ignorance which surround the processes would probably have been exchanged for those of secresy or those of patent protection. It may be that in some of the methods to which our correspondent refers a valuable and practical process may exist; but this can only be ascertained by persevering experiment on a practical scale. In the meantime, whatever possibilities they may possess are fettered by ignorance and undevelopment.

Photographers have received much, it is true, of their knowledge, much of the information upon which their means of securing an income is based, for nothing. The art has been largely indebted to amateurs, to whose experimental labours, undertaken for love, many discoveries have been due. In carbon printing, where the steps of progress are well marked, the gratuitous and the commercial efforts in removing the fetters of ignorance have been almost equal. The initial step in relation to almost all existing carbon processes was a gratuitous one. Mungo Ponton published the fact that bichromate of potash was a sensitive agent: he lives, and is scarcely acknowledged with a passing word of gratitude. M. Poitevin, who utilized the agent, and devised a carbon process, patented it; but has, we fear, not possessed the commercial faculty of reaping where he has sown. Mr. Pouncy—who, in his early labours, did good service in showing what could not be done, thus clearing the way, and making apparent what was necessary—was paid by subscription. Mr. Blair, a most important and active adjutor in removing the fetters of ignorance, both by suggestion and practice, has worked altogether gratuitously, for it is questionable whether the subscription list of his pamphlet paid material expenses. Fargier, who devised a means of putting into operation the idea which Laborde, Barnett, and Blair had published, of securing half-tone, patented his process, and, had it been commercially practical, would doubtless have maintained his patent. Swan devised a practical method of putting into execution the ideas of those preceding him, and he patented it; but, having devised this practical means, and proceeded to work the process commercially, he had to do much more. He had to discover much which could only be done when the work was executed on a commercial scale. Not only was the practical means of working certainly and commercially wanting, but even when that was discovered, the thing was still in the experimental stage, and required years of close observation and study of the work on an extended scale to give it a really practical value. This it has secured in the labours of Mr. Swan, and the further labours and simplification of Mr. Johnson.

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* Take an example. The majority of the Sarony photo-crayons sold are from negatives in existence, and form a distinct source of profit, which would not have been obtained if Mr. Sarony had not introduced the novelty in question. The nett profit to the photographer, as a rule, will be about forty shillings on each portrait, whilst the nett profit of the patentee will be less than a shilling, or two-and-a-half per cent. on the transaction.

But without such an interest as a patent gives, it is probable that many years would have elapsed before the fullness of experience could have been gained by the most skilful and ardent amateur experiment. But suppose the same information and completeness could have been secured by the voluntary labours of amateurs, is it fair to expect or desire it, or to grumble about fetters, because the capital of some one having been engaged in transmuting the fetters of ignorance into the temporary fetters of patent, some return for that capital is expected?

A recent writer in our pages pointed out that secresy was a much greater evil than patent monopoly. In our estimation the fetters of secresy are amongst the most injurious of all fetters, but the unquestionable right of a discoverer to keep secret his discovery saves him from much of the obloquy which so unfairly attaches to the patentee. Whilst a thing is a secret, no one can say, "I knew that before." But the community is not enriched by a secret, and the fetters it imposes are always clogs, and, at times, effectual hindrances to progress.

But what are the trammels imposed by patent law, and how do they fetter processes? How do the carbon patents in existence impose fetters, and what would be the gain to the community if the said processes were at once "set free"? The patents of all carbon processes of much practical importance are now in the hands of the Autotype Company. That Company has announced the fact that amateurs are at full liberty to practise the process unfettered. The fetters, then, consist in the fact that those who use for their own profit a process they did not invent shall share that profit with the person who did invent the process. The gain which professional photographers would secure by the abolition of these patents would be, at most, immunity from a just payment—most probably a small one; and this we are satisfied the mass of them—certainly the best portion of them—do not desire. The gain to amateurs would be the probability of many persons commencing the manufacture of other materials, who, having little experience in carbon printing, and no serious stake at issue, would be less likely to manufacture the materials with care and skill than the patentee, whose experience is necessarily large, and whose commercial stake is more likely to be deep enough to secure the greatest attention and the highest attainable excellence. Looking at the matter from this point of view, we must confess that we are compelled to regard patents as frequently removing rather than imposing fetters, and as stimulating the development of processes which would otherwise remain in the fetters of ignorance or secresy.

THE FIRST CARBON PRINTS.

Mr. Beattie, writing to a contemporary, justifying his assumption that Mr. Pouncy was "the first who practically worked in carbon," says that "in Mr. Simpson's book I find nothing that clearly contradicts that statement." Mr. Beattie would not, we feel satisfied, wilfully mislead the reader, but it is clear that he is here under some misconception, and, as we are by implication cited in support of it, we feel bound to correct the error. We have repeatedly stated our conviction that Mr. Pouncy was not the first practical worker in carbon, and in our Historical Notes on the subject, compiled with the utmost care and impartiality, we not only point out that M. Poitevin's and M. Beauregard's patented processes were published, with sufficient clearness and detail to show that the inventors had practically worked in the processes specified, long before Mr. Pouncy was heard of, but we state that we ourselves had seen carbon prints by M. Poitevin produced in 1855, a period of three years before Mr. Pouncy's first announcement of his labours. We said that, so far as we had evidence, Mr. Pouncy appeared to have been the first practical worker in carbon printing *in this country*; and it is probably to this sentence Mr. Beattie alludes in referring to our book. Amid the vexed questions of priority belonging to many photographic processes there is none so clearly and certainly established, we think, as the fact that printing with a compound of chromated gelatine and black pigment had its origin with M. Poitevin, to whom, as a valuable contributor to the progress of photography, who has received but little substantial benefit from his labours, it is the duty of every one, we think, to award his fair share of credit.

AMERICAN NATIONAL PHOTOGRAPHIC ASSOCIATION.

The first annual meeting of the National Photographic Association of the United States has just been held in Boston, under the presidency of Mr. A. Bogardus, and has secured an amount of enthusiasm and success which augurs well for a future prosperous career. The proceedings appear to have been of a very pleasant character, including the delivery of capital addresses and lectures, reading reports, discussion and modification of laws, the enjoyment of suburban trips, sitting for group pictures, and witnessing carbon demonstrations. The meetings continued for four days, during which time an excellent photographic exhibition was open, which included contributions from both sides of the Atlantic. It appeared that during the year two hundred and thirty additional members had been added to the Association, and the President expressed a belief that before another annual meeting a thousand more would have joined.

The objects of this Association, as we have before explained, are more comprehensive than those of photographic societies in this country, including consideration of the commercial interests of the profession, as well as the scientific and artistic progress of photography. The means of resisting unjust patents, the examination of secret processes offered for sale, the formation of an apprenticeship system, the establishment of a relief fund, and similar questions receive attention, as well as the modes of securing advancement in art and science; and, so far as the operations have proceeded, all these purposes seem likely to be carried out in systematic and satisfactory fashion.

The exhibition appears to have been an excellent one. Our friend, Mr. Wilson, Editor of the *Philadelphia Photographer*, says:—"*We* never saw such a collection. *No* man ever saw such a one in America. When we consider that no premiums were offered, no incentive, except encouragement given, it was wonderful. Our only regret is, that the whole fraternity could not have been there to enjoy it and profit by it." Of the one hundred and fifty exhibitors a fair share were European photographers, although very few of them, we regret to add, were from this country. We find amongst the familiar names attached to contributions, those of Adam-Salomon, Reutlinger, Lafon de Camarsac, Tessie du Motay, Soulier, Romain Talbot, and others, of Paris; Ernst Milster, Loescher and Petsch, Grune, Dr. Vogel, and others, of Berlin. From this country the works of Mr. G. W. Wilson, of Aberdeen; Mr. Edge, of Preston; Mr. Burgess, of Norwich; Mr. Hubbard, of Oxford Street; Mr. Woodbury, and Messrs. Robinson and Cherrill, appear. In reference to the latter, the published list contains the following entry: "A large variety of art studies from nature printed from several negatives, and distinctly different from aught else exhibited."

The lectures appear to have been very interesting, and we hope to find space shortly for some extracts. Dr. Towler's subject was the important one comprehended in the title "Concentration of Ways and Means," and was at once eloquent and practical. Dr. Boynton gave an admirable lecture, illustrated extensively, on sunlight and moonlight. Some other addresses were delivered, and lantern exhibitions held.

A pre-eminently social and liberal feeling seems to have prevailed. The Mayor of Boston attended, to welcome members to the city. Mr. H. T. Anthony presented five hundred dollars to the funds by remitting a debt to that amount; and the Scovill Manufacturing Company presented one hundred dollars towards the expenses of the occasion. The able and energetic honorary secretary, our friend Mr. E. L. Wilson, was presented with a testimonial value three hundred dollars, in the shape of a handsome piano. Altogether, this meeting, our readers will see from the brief *resume* of its proceedings, has been one essentially pleasant, and characterized by the feelings which must ensure success in any undertaking.

We conclude by extracting some excellent remarks from the *Boston Daily Advertiser*, in an article on the meetings of this Association:—

"Among the many gatherings of this year of meetings, the convention and exhibition of the photographers deserves attention as something quite as new in its way as that great coming event whose shadow overcasts the public interest in matters of less pretension. The affair at Horticultural Hall marks a step forward in the history of photography—an advance toward that dignified position which is its due among the arts and sciences, for it is both a science and an art, as well as a handmaid to both. It is scarcely a quarter of a century since the discovery of Daguerre burst upon an incredulous world; its progress since then has been more rapid than any other of the inventions of our inventive century, and to-day it has become almost as familiar as the air we breathe, mingling in every relation of life, until we hardly realize its wonders, and many already lament its limitations, and sneer at its popularity as a parody of genuine art.

"To those whose ideas of the value and capabilities of photography are most exalted, the study of some of its fruits as exhibited here this week will give many new revelations of its power. The reproduction of a face with unimpeachable fidelity of feature, and often with marvellous vividness of expression, the multiplication by the thousand of striking miniatures of the presence and bearing of distinguished men, the portrait of the old homestead, done at once more faithfully and more cheaply than any artist's brush could do it, have long been known to us. Even in these simple branches of the art the best pictures exhibited show how much the picture-takers have to learn—in judicious and ingenious arrangements of light and shade, in the appropriate selection of accessories, in that most difficult task, the reproduction of characteristics as well as of form and feature, and in the moderation which leaves the best work of the camera untouched by the perilous paint-brush, combined with the skill which does away with all dullness, and makes vividness of outline almost a substitute for colour.

"But there are other fields which the majority of photographers leave almost untrodden, though they are wide open to ambition, patience, and study. In portraiture the pictures of children which come from Germany, in which not only the likeness of the child, but its life and nature, are set before the eye, so that the picture becomes in itself a poem, have never been matched in this country. In outdoor scenes, none of the many beautiful spots which American tourists know have ever been depicted like those wonderful Swiss landscapes, every part in equal proportion, the distance subordinated to the foreground, the right and left to the centre, only as the eye itself subordinates them.

"The first lesson which this exhibition teaches to the amateur observer, as well as to the most experienced student, is that photography is a progressive art. Many of the most radical of its recent steps in the past may be traced in these alcoves, and we can all remember a day when the best European work was not equal to the crudest work of an American village gallery now. But its progress in the future has no visible boundaries. Whether the next great gain which the imagination suggests—the reproduction of the colours as well as the forms of nature—be ever accomplished or not, the improvement in essential details is sure to be swift and steady, and is certain to be stimulated and accelerated by the emulation induced by such exhibitions as this. And, meanwhile, it is well to remember that the art is of the highest practical value. No Mr. Gradgrind can sneer at it as among the ornaments of life. Every science owes it something. Astronomy has gained, by its means, some of the most important discoveries of this age. Medical science is incalculably indebted to it. Justice is aided by it, not only by the assistance which it gives in the pursuit and identification of criminals, but by the wonderful agency by which it at once reveals and proves the offence of the most practised forger. The many who cannot travel derive from it, with its adjunct the stereoscope, a knowledge of the art, the scenery, the architecture, the very life of foreign lands; and the many who do travel find their enjoyment doubled by its means, in putting the pleasant reminiscences of the memory visibly before the eye. A volume would not suffice to tell of what it has done; no prophet is wise enough to predict what it may yet do."

MASKS AND FACES.

BY PROTAGORAS.

Part IV.—Qualifications of Good Operators.

What is an operator? Strictly speaking, every one who works is an operator; and all who work at photography, no matter what the branch, are photographic operators; but by common consent the term is confined to the man at the camera who takes the negative. In this limited sense I understand it, no matter whether the negative-taker be the proprietor of the establishment, or a hired assistant. This man I hold to be the chief worker—the photographic high priest. For any man who does uniformly good work, especially in portrait negatives, I hold the highest respect. If the occasion needed, I should like to sing a poem of praise to the valuable services he renders to society. The camera is his symbol—the instrument with which he performs his magic spells. This one-eyed box is often compared to the painter's pencil, and the simile is as excellent as it is obvious. But I would compare it also to a musical instrument, from which the most eloquent music could be discoursed, or the vilest discord uttered, according to the skill of the performer. I have so high a reverence for its uses that I think individuals should obtain a diploma before they should be permitted its professional use, as a guarantee that its high capacities should not be abused. I have the utmost faith in its fitness as a material instrument to obey the mind of man; and I also have faith that in another generation a superior class of men will preside over it, and, bringing to it a higher and more varied culture, will correspondingly develop its capacity. The camera itself, of course, is but dead matter; it is the mind of man that uses it as a tool to execute its own conceptions; therefore I honour the man who continuously does good work with it, because I then know that he is its master, and makes it do his bidding. He knows beforehand what he wants, and he uses the one-eyed creature to execute his design. The more knowledge he brings to bear, the greater capacity will the instrument he found to possess. Therefore it is singling out one desirable branch of culture.

I have said in former papers that a good operator must not only have artistic knowledge and be perfect in mechanical photography, but that he must also be a *physiognomist.*

I know that this is a novelty, and partly because it is, but chiefly by reason of its importance, I return to the subject, and further insist on it.

For a man to be master of his profession he must be master of all its elements, and be able to govern them. It is not sufficient that he thoroughly understands one part; even that one part he may not be able to use unless he understands the remainder. There is a story told of a person who wished to be an orator. To this end he went daily into his garden and harangued his cabbages, as though they were a large audience. After a considerable time he determined to address a public meeting. When he rose, the sight of the sea of upturned faces completely discountenanced him. He stammered a few words, and the people giggled; he tried again, and they laughed; and he ended his first and last speech by declaring that if they were all cabbages he would be able to address them. Now, a photographic operator who relies on his knowledge of art and chemicals is very much like this would-be public speaker. If his sitters were all cabbages, having no will of their own, allowing him to place them how he liked, and to do with them what he liked, under those conditions he might do his work well. But sitters are *not* cabbages, and often have very obnoxious ways of proving it. If a man, from these sitters, is to obtain characteristic and agreeable portraits, he must know how to manage *them*, as well as his photographic appliances. If sitters did but know how lamentably they often stand in their own light; how, by their ignorance, their folly, their vanity, their self-sufficiency, they defeat their own desires, they would not behave in their customary manner. But they do not know this, and it is hardly probable that in our time, if ever, they will know; but meantime portraits must be taken. Hence, physiognomical knowledge is necessary, not to manage the chemicals, but the sitters. Strictly speaking, I know as well as anybody that physiognomy is no necessary part of photography, and I have no desire to heap it on photographers' shoulders, and ram it down their throats. Their work is quite irksome enough without it; and so long as photographers confine themselves to take landscapes, copying paintings, and the myriad applications of the art, they need not bother their heads about it. But when the photographer invites the world and his wife and children to sit to him, and undertakes to produce "life-like likenesses" of them, then the matter is changed. In addition to managing his apparatus and his chemicals, he has to manage *them* too. They become, so to speak, part of his apparatus. The best lens and chemicals in the world, with the best operator, cannot produce a portrait unless there be a sitter. Therefore a sitter is a necessary part of the operation. If sitters were mere clay—animated clay—human cabbages—willing, obedient creatures, with intuitive knowledge what to do, and what not to do, the case would be otherwise. But, as I said before, they are considerably different; and therefore this special knowledge is necessary. Pope says:—

> "The noblest study of mankind is man."

The portrait photographer will find that this study is also the most useful, to say nothing of its being in the long run the most *paying* one. Physiognomy is a short cut to this study—a kind of royal road to it. It is just that elementary knowledge that is immediately useful and pre-eminently practical.

If I be told that portrait photography has been carried on these ever-so-many years without it, I say, so much the worse; and I say, further, that it is one of the reasons why the art has not taken a higher status. It may be pointed out that many men have been successful as portrait photographers, who have not had this knowledge. To this I may assent, and reply that so they have gone on using their lenses without understanding optics, and their chemicals while innocent of chemistry; but would they not have done better if they had understood these sciences? But I deny the base of the argument. I affirm that no man has been continuously successful in producing characteristic portraits without physiognomical knowledge. I am not pleading for the exact rules laid down by Lavater, or Gall, Spurzheim, or Combe, but for that shrewd appreciation of natural character as indicated by the form, the complexion, the build of body, the tone of voice, and the general bearing of the individual. No man can go through life without having some knowledge of this kind thrust upon him: he is obliged to learn it, whether he will or no, and usually knows more than he gives himself credit for. Some men pick it up quickly, and are full of it, and, if otherwise equally skilful, these are the men who make the successful operators, who, often unconsciously, so throw themselves into their work that they secure the character and expression of a sitter, as well as the mere likeness.

Perhaps sufficient argument has been expended on the desirability of adding this branch of knowledge to the operator's qualifications. There may be some, however, who may be sceptical, and would rather see a little practical use than listen to any number of reasons. The present paper is too far advanced to cite instances, but on another occasion I will attempt to show my ideas in practice. We will suppose ourselves witnesses of two scenes: in the one case we shall note the entrance of an average individual into a portrait room to have his carte taken by an average operator; in the other case we shall rehearse what may be expected by another operator who has paid some attention to appreciation of natural character by physiognomy, and who will attempt to apply it to his daily work.

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 2.—Salomon Prints.*

I think that I might now venture on bringing my chapter to a conclusion, by observing, with reference thereto, that the details I have given, necessarily long when described in print, are by no means difficult in their practical application, especially when the work is essayed by persons of cultivated tastes. To others, I say, leave mediocrity as it stands, and enjoy it, but do not spoil what is not quite spoiled by subjecting the prints to dodges which you are unable properly to perform. To the favoured few who can produce a Salomon negative that needs little or no subsequent dodging, I would counsel that they avoid dodges, by all means, if they can manage to get on without having recourse to them. And, finally, to all my readers, I would tender the following advice: Do not play the part of copyists if you can strike into tracks of originality. The field in which photographers labour is inexhaustible in its resources; the ground of real art, apart from landscape, is, as yet, scarcely broken; photography is capable of great things, so is a violin, but each need a skilful performer. If I might venture on suggestion, I would briefly observe, do not stick so tenaciously to the dull monotony of producing pictures in a glass room where an equilibrium of light unnaturally excludes every relief-yielding shadow.

With reference to this subject, I have much pleasure in stating that my much esteemed friend, Mr. Hubbard, is working in the direction I have above indicated; and a few beautiful studies he has recently shown me fully bear out the general correctness of my long cherished views on the value of shadows, for the examples referred to appear as if they were copies from exquisite paintings in monochrome. I am incapable of awarding a higher meed of praise. The gentleman I have alluded to, I scarce need say, has an artist's hand and brain, and, as a natural accompaniment, he is fruitful in dodges. I live in hopes that ere I complete my series of papers on dodging, I shall gain the consent of Mr. Hubbard to allow me to present to my readers details of his mode of working. If such consent should be given, my part of the business will be, indeed, a congenial task; and it a dedication was admissible, I fain would dedicate a special chapter to one of whom it might be said, Nature has given him great abilities, but has blinded his eyes, that he may not perceive the vastness of the gift.

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* Continued from p. 342.

Supplementary Remarks on "Dodging" Negatives.

In my remarks on the subject of touching up negatives I have advocated the employment of Indian ink as a pigment; that substance might, however, be replaced by any other suitable material. In my own practice I prefer the ink, because I am better able to judge, from the tints it produces, the printing value of each touch applied. Ere I have done with the subject of dodges, I hope to produce proof that Indian ink is capable of imparting to landscape negatives effects that are always coveted, but rarely realized. As briefly as possible I shall endeavour to convey an idea how touching a portrait negative should be performed.

1st. For purposes of broad touching, under any circumstances, the ink should be rubbed up with stale beer, to insure adhesiveness. For limited touching, water will answer nicely.

2nd. To strengthen lights on any part of the head and face, the colour should be applied to the back of the negative, save when the eyes need touching. Expert hands at handling the brush may venture on the collodion side of the plates, but defective touching is best concealed when applied to the back of the negative, as advised. To perform the operation, the colour must be mixed at suitable strength, and applied to the glass with a short hair "pencil brush." When "set," and before actually dry, the edges of the larger spots must be softened off by stippling with a dry brush or with the tip of a finger. A very good effect can, by these means, be produced when the shadow side of a face prints too deeply from the untouched negative.

When a large surface has to be covered with colour—such as a background in a large negative—a soft hair "fitch" would prove useful for stippling purposes. Due regard, in such cases, must be paid to such parts as are required to graduate with dark. To effect this, the colour must gradually be made thinner, until it melts, as it were, on to the bare or semi-transparent parts of the plate.

3rd. When the collodion side of a negative is operated upon with pigment and brush, by all means avoid over-opacity. This remark specially applies to the touching up of the eyes. The light spots on the pupils need very skilful treatment, or they had better be left untouched; but indications of the locality where the touch should be applied are perceptible in most negatives, so that but small difficulty need be apprehended. *Avoid obtrusive touches*, is a maxim which demands religious homage.

4th. As before observed, when detail is left for the brush to provide, be specially cautious against over-doing. Let the additions by artificial means be made faint and suggestive, for the most skilful hand would fail in imitating the pencilling of nature. Suggestive detail, as advised, would lead the mind of the observer to imagine the presence of the rest.

5th. When engaged in touching, always avoid abrupt finish; nature never performs her work crudely. Follow her example. Soften off your touchings with a suitable brush, or use other means always at *hand*, viz., the tips of the fingers.

In conclusion, should I have omitted any particular, or have failed to convey the matter I have dealt with in the above chapter sufficiently clear—in a word, should further information be needed—I am at the service of my readers.

My next chapter will treat of the silver bath and its troubles.

SKETCHES OF TRAVEL, FROM A SUN-PAINTER'S PORTFOLIO.

BY S. THOMPSON.

No. 5.—Across the Alps.

Half a dozen journeys over different passes in this magnificent range of mountains had taught me the necessity for fully preparing for the cruellest usage to which photographic baggage could be subjected; but during the month of August, in this year of grace, Nature added another element of danger and mishap. Fells railway over Mount Cenis had been such a success, that the proud boast that (practically) there should be no more Alps seemed nearer realization than many were willing to believe. But, alas! for those schemes of men and mice which gang so oft agley. Nature once more re-asserted her dominion, and at one fell swoop annihilated the work of months. So it same to pass that my baggage could not be got over Mount Cenis, and the old "Simplon" route had to be resorted to, but not without moving accident by flood and fell.

Early in August the great heat which prevailed had acted on the glacier of Kaltenwasser to such an extent as to break down the dykes above the village of Visp, and sweep everything before it. From thence to Brieg—the scene of "No Thoroughfare" and memories of the immortal Wapours—the country was, to a great extent, under water. At one village whole houses had been carried away, and nothing but portions of the walls left standing, spectrally suggestive, amidst the wild waste, of rushing waters. A halt had to be made here, and all the baggage shifted by moonlight at 1 a.m., and the road pursued over temporary wooden bridges. A little cognac was only procured by some Americans and myself by effecting an entrance into the second story of the inn across some rude planks laid down for the purpose. The scene was one of the most painful desolation. Communication by carriage had been suspended for eight days, and only resumed under most difficult circumstances. A very much larger percentage of breakages than usual was one of the consequences. Although the precaution of bringing two large baths had been taken—one of ebonite, one of glass—both were broken before reaching Italy—the ebonite first. Anyone who would invent a bath of large size less liable to breakage than those at present in use—a bath at once as reliable as glass for purity, without its fragility—would confer an everlasting boon upon all photographers who work plates larger than 9 by 7. The writer of these lines would walk a weary journey in any direction to obtain one, and embrace it with undissembled joy and affection. Ebonite does not fulfil those requirements in a large size. Last season one of the same size was broken at Chamouny under anything but trying circumstances. They are scarcely less brittle than glass.

These remarks apply only to baths of large size. Baths of 9 by 7 in., both of glass and ebonite, I have carried all over the Continent in perfect safety; but directly a larger size is attempted, the risk is increased tenfold. In this case, as in previous cases, they were well packed and imbedded in wicker panniers, where no blow could possibly reach them. The inference is that they are broken by concussion from their own great weight.

The Continental system of taking the luggage entirely from its possessor is one fertile source of danger. You may see, at stations on the French and Italian railways, porters drag your cases to the edge of the luggage vans, and then, instead of *lifting* them down, let them down on the platform as one would a bale of cotton! You may see this, and flatten your nose the while against a pane of glass in the *locked-up* waiting room without being able to get at them to administer one word of caution or deprecation.

At Padua, the other day, I saw under such circumstances a mountain of luggage piled, and then saw the whole topple over! But this is a digression.

Beyond the fourth refuge on the Simplon a portion of the gallery had been carried away, and a splendid ducking was the result. On the Italian side the defections were very slight indeed. But all was passed on arriving at Domo D'Ossola, and the promised land lay at our feet in all its loveliness—

> "There every sound and every sight
> Means more than sight or sound elsewhere,
> Each twilight star a twofold light,
> Each rose had double redness there."

Would that there was no reverse side to the medal—that mosquitos abounded less, and all the other varieties of insects known by ugly names were less rabid—that such towns as Ferrara, Mantua, and the like, had fewer grass-grown streets, and were not overhung with the same pall of listless decay. Ever the mosquitos sting and the fleas bite, "as is their nature to," and the virtue of cleanliness—though, perhaps, it is, after all, not next to godliness—does not put in an appearance anywhere. It is quite another thing setting up a tent in such places than amid the splendid scenery of Switzerland, for the heat of an Italian sun is untempered by cool breezes that have crossed the icy glaciers.

The streets are very narrow, and many of them hold about as much smell as a person can stand; perhaps if they were wider they would hold more, and then people would die. Though paved with stone, they are carpeted with all manner of decomposing refuse, and other odds and ends, and the people sit at their doors and enjoy it. The natives don't care much about this sort of thing. They work a little while in an indolent kind of way, and then leave off and catch fleas. As a well-known American writer has observed, this does not require talent; they have only to grab; if they don't get the one they are after, they get another; it is all the same to them; they are not particular; they have no partialities; whichever one they get is the one they want. They have many varieties, but it does not make them arrogant. They have more of these kind of things than other communities, but they don't brag. You may see Murillo's beggar-boy enacting on many a door-sill; picturesque lads engaged in what poor Hood called "the Murder of the Innocents."

Care is required in the use of the water in Italian towns for any photographic purpose. It is particularly bad for such purposes. For all developers and solutions, distilled water must be used. They charge, however, exorbitantly high for it; between one and two francs for a pint bottle only.

Italian landscape, as a rule, does not possess that kind of beauty in the representation of which photography most excels. The terraces of white houses sparkling in the sun almost invariably give a spotty appearance to the composition. It is in its noble remains of art, rather than in the domain of nature, that the most fruitful field may be found.

> "——Nature reigns not there alone,
> A mightier queen beside her lives,
> Whom she can serve, but not dethrone;
> For she is farther from the state
> That waited on her Eden-prime,
> And Art remains by Sin and Fate
> Unscathed, for Art is not of Time."

To describe many of them would be tedious; one—whence these sheets are penned—may be taken as a type of the cities of North Italy.

Verona la Degna is finely placed, surrounded by groves, in which the tall dark cypress is the most prominent feature everywhere. Approaching it from either side, there is no occasion to ask, with Rogers,—

> "Is this the Mincio?
> Are those the distant turrets of Verona?
> And shall I sup where Juliet at the masque
> Saw her loved Romeo, and now sleeps by him?"

On every hill stand the forts erected by the Austrians during their long occupation of the Quadrilateral, and not without reason; Solferino, Villa Franca, and Custozza are all close by.

Verona abounds with subjects of interest to the archæologist. It is a favourite place of sojourn with Ruskin, who grows eloquent upon "the dark streets of Verona." Specimens, of great beauty, of the architecture of various periods are here, commencing with the Imperial Roman age. The Amphitheatre is of the same date as the Coliseum, 81-117. The ruined Palazzos everywhere attest the grandeur and magnificence of Verona in the middle ages. Here Dante found an asylum in the hospitable court of Cangrande, the most magnificent of that age in Italy. The tombs of the Scaligers supply some of the finest examples of Gothic tombs of the fourteenth century. The Church of Zan Zenone supplies one of the most interesting examples of the ecclesiastical architecture of the mediæval period. That of St. Anastasia is perhaps one of the most beautiful Gothic churches in Italy. San Michele's works, in the Renaissance style, exist here, but many of them are fallen to decay, or been spoiled by alterations and repairs. Some of the best examples of the Cingue Cento style require to be hunted up. I found, by accident, some exquisite examples (details) of that period in a back strada or street, in one of the slums by the impetuous river Adige.

MANIPULATIONS IN PHOTO-CHEMISTRY.

BY JAMES MARTIN.*

In my last contribution, pulverization was treated principally as a means of aiding solution; but when the substance is to be used in its dry state, it will, at most times, require to be sifted; this, by the aid of the drum sieve, can be done in various degrees of fineness, as may be required. This instrument is very complete; it consists of three parts: of the bottom, to receive the powder as sifted; the sieve of silk gauze or fine wire net; and the cover. The top and bottom are of leather; the sides similar to the wooden hoops of a barrel. Each part fits tightly on the other, so that, when put together, the operator is entirely protected from the dust arising whilst sifting. There are generally two or three additional sieves, of various degrees of fineness. I may observe that all powdered substances to be sifted should be as dry as possible, otherwise they will clog the meshes of the sieve, and not pass through them. It should be well cleaned out with a brush after use, and kept in a dry place. At the bottom of many solutions, after being left for a time in a quiescent state, there will be found a deposit or sediment, termed in chemistry the fæces. This may often be separated from the liquid by decantation—that is, by declining the lip or canthus of the vessel in which it is contained (whence its name). This will require a steady hand, pouring a continued stream until as much of the liquid is drawn off as is possible. Care must be taken that no agitation is caused by a sudden tilt of the vessel. It will greatly depend upon the gravity of the deposit how far the operation can be successfully carried.

Should it be impossible to clear the liquid by these means, resource must be had to the operation of filtering. For this, funnels are required. These are made of various sizes and substances, such as wedgwood ware, glass, gutta-percha, ebonite, india-rubber, copper, and tin. For general use in photo-chemistry, the two first mentioned only are required, the others being only fit for special purposes.

Funnels are also of great use to facilitate the pouring of liquids from one bottle to another; their necks should always have either ribs or grooves running down the outside of them, otherwise, should the neck of the funnel fit that of the bottle tightly into which it may be inserted, the liquid will not run, as the air in the bottle is prevented from escaping to give place to the liquid being filtered or poured into it. This effect may be obviated by inserting a small strip of card or wood between the neck of the bottle and that of the funnel. Stands are made with arms sliding on an upright stem, fixed upon a heavy foot, for the purpose of supporting these instruments when in use.

The substances through which liquids can be filtered must, of course, be of a porous nature or loose texture, such as felt, flannel, tow, cotton-wool, paper, and linen, and, in aid of these, charcoal, bruised glass, and kaolin are used. The filter in common use is unsized paper, known as blotting-paper. A circular disc of this is cut to the size required, and folded crosswise twice, thus forming a porous conical lining to the funnel in which it is to be placed. As this paper is tender, the apex of the cone should not be creased too tightly. There is a method of folding the paper, used by some chemists, which is very effective, which would require a lengthy description in writing, but which, if seen, would be readily understood by anyone; the principle is, that the filter shall only be in contact with the funnel at a sufficient number of points to bear the weight of the liquid to be filtered, thus allowing free egress for the displaced air, and avoiding adhesion of the filter to the funnel. It is well to wet the filter before use with a little distilled water, as this prevents the pores of the filter becoming clogged so soon with the fæces.

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* Continued from p. 256.

It is requisite, in many cases, to repeat the operation of filtering several times over before the liquid is cleared. As a case in point: In my last negative I found some pinholes. From the number of plates sensitized in my nitrate bath I expect that it has become saturated with iodides and bromides; still, I think, with proper correction, it may be made again serviceable. There was originally 20 ounces; I therefore pour it into a 20-ounce measure, and find there are but 15 ounces. I add 5 ounces of distilled water, and stir it. It now takes the appearance of milk. I filter it. For the first time I see little difference; but after several times repeating the process it becomes as clear as water. I now add sufficient nitrate of silver to make it up to its original strength, try it, and find it work well.

The filtering of volatile and viscid liquids, such as collodion, or of large quantities, as water, requires special apparatus, for a description of which I refer you to the ingenious contrivances advertised in these pages. It is frequently the case that the object of separating the deposit from the liquid is to retain the former, and sometimes both of them. Let the liquid drain as completely as possible from the filtrate, then take out the filter, with its contents, carefully, and place it in a common plate or evaporating dish; dry it by a suitable heat; then the substance can be separated from the paper with little or no loss.

114, *High Street, Ilfracombe.*

REMARKS UPON DRY-PLATE PROCESSES.

BY A. DE CONSTANT.*

Twelve months have elapsed since I first made experiments with mixtures of various preserving materials, and obtained profitable results therefrom. I was not alone, however, in the employment of mixed compounds; Roche employs a formula of—

Coffee	32 parts
Water	360 ,,
Sugar	16 ,,
Gum (boiled)	8 ,,

while Bardwell uses a cold prepared extract of coffee, together with sugar, and coats the plate thus prepared with a solution of bromide of ammonium of the strength of 1 : 130. The latter gentleman's statement, that plates of this description are capable of receiving instantaneous impressions, has not been verified by my results; the plates may possibly be more sensitive than those prepared with ordinary coffee extract, but the amount of exposure required is still equal to three times that of wet plates, and then the negatives produced are hard, and almost positives in appearance. Newton mixes morphine with coffee or tannin, and adds thereto sugar of milk. He likewise speaks of increased sensitiveness, but morphine is very slow in its action, and the sugar of milk is of no assistance. The addition of sugar of milk is stated to prevent fermentation, a very important point, certainly; but I have also remarked that it is very difficult to dissolve, and that frequent filtration is incapable of removing the finely divided particles suspended in solution. For this reason I prefer to use ordinary white sugar.

I prepare my coffee infusion according to Baratti, and my gum solution according to Gordon (100 parts water, 4 of gum, and 1 of sugar-candy). Both solutions are mixed as wanted. Gum imparts sensitiveness, coffee durability. At present, the proportions of the two solutions that I employ are, of gum one part, and of coffee two parts. Pure coffee plates will keep for a period of twelve months, gum plates for not quite so long. The proportion of gum used by me is sufficient to impart to the negative the special qualities of softness and atmospheric effect. I have also employed gum and tannin in the same proportions, and have thus obtained soft, clear negatives; but the plates were less sensitive, and, inasmuch as the tannin has a tendency to damage the silver bath, its employment involves considerable risk.

My new preservative mixture has afforded me the most successful results, for by using iron development I need expose but little longer than with wet plates. I have much pleasure in forwarding you a bottle of the preservative, and will send more news respecting it as soon as I have properly controlled my experiments.

As I stated on a previous occasion, it is necessary to select developers in accordance with the character of the preservative employed. For acid preservative treatment, an alkaline developer should be used, and *vice versa*. Development with iron requires much consideration; as a rule, it furnishes negatives of too transparent a description. It is also a matter of difficulty to moisten the collodion film so uniformly that the iron acts evenly over the whole surface. A much better result is obtained when a dilute solution of iron of but three per cent. strength is used; the solutions of Gordon and Newton, with five per cent. of iron, are too concentrated. My formula stands thus:—

Water	100 parts
Sulphate of iron	3 ,,
Acetic acid...	3 ,,
Alcohol	5 ,,

without the addition of gelatine.

A stronger solution has the effect of bringing out the high lights too prominently before the half-tones have appeared.

Of a very interesting character are the results arrived at through my experiments with alkaline development. Major Russell contends that collodion containing a large proportion of iodide cannot be developed by an alkaline solution. This statement would be correct if he had added the words, "in the way I employ the developer;" for if the processes recommended by Russell, Sutton, and Mawdsley, in which pyrogallic acid with a trace of ammonia is employed, are used, it is only with the greatest difficulty that a picture can be developed when working with iodine collodion. It is altogether another matter, however, if a weak solution of ammonia is first poured on, followed by a minute quantity of pyrogallic acid; the action then is rapid and wonderfully harmonious. With gum-coffee plates this is, indeed, the best developer.

I now return to the subject of the unfortunate preliminary coating for dry plates, and I am thankful that I have now settled this point in my mind. In respect to this subject we have, as in many other matters, searched at a distance for things lying at our elbow. I have already convinced myself that (as Lea also correctly asserts) the air-bubbles do not arise from the fact that the preliminary coating is more or less tenacious to the glass, but that they are caused by the collodion itself. Some preservatives—as, for instance, gum—open the pores of the film, and thus allow water and developer to pass through as easily as through a net, causing all kinds of annoyances. But, it will be asked, in what way will the preliminary coating influence the matter, for it is surely incapable of driving off the permeated moisture? This is true enough; but it is also possible for there to be well and badly adapted materials to the purpose. For instance, gelatine yields invariably an unequal film, which is favourable to the introduction of moisture. India-rubber is much affected by moisture, and possesses, besides, many disadvantages. The simplest and best material for the purpose is very diluted white of egg, in the proportion of one part albumen to thirty parts of water. When this is carefully spread over the glass plate it is impossible that any of the liquid should attach itself to the reverse side, and, once between the glass and collodion, it is difficult to understand in what manner the silver bath can be affected by its influence, as is frequently stated. Of course, if it be poured upon wet plates, it may probably come into contact with the back of the glass, and thence contaminate the bath; but this is not the case in the practice of dry-plate photography.

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* *Photographische Archiv.*

I put my faith, therefore, in albumen, but believe, meanwhile, that we should diligently search for a sufficiently solid collodion, which may be applied without any preliminary coating, and may be protected with gum. The early idea that old porous collodion is better adapted to the preparation of dry plates than that freshly prepared, I have not found verified, but believe, on the contrary, that old collodion allows moisture to penetrate more easily than a new material; at least, this failing I have observed in old collodions of Mawson and Thomas, and in compounds of my own manufacture, whereas fresh Mawson collodion is not open to the objection.

Gum appears to exert a specially unfavourable influence upon the collodion film; it never ensures certain results. It is for this reason that Gordon has given up the employment of gum alone, and has adopted the use of an iron developer; and it is for this reason, also, that I decided upon the mixture of gum and coffee. The coffee yields a beautiful varnish-like film, if neither extracted cold nor boiled. By the former method of preparation, the coating does not become brilliant; by the latter, the extract contains too much tannin, which, to my idea, is injurious. To pour boiling water upon the coffee, and then allow the same to cool, is the best mode of proceeding.

Gum solution, as likewise coffee extract, cannot be preserved for any lengthened period, the former soon becoming acid; the addition of a few drops of essence of cloves will have the effect of preserving both solutions. Would the admixture of a small quantity of carbolic acid exert an injurious influence upon the plates?

Lausanne, 21st June, 1869.

ON PYRO-PHOTOGRAPHY IN ITS RELATION TO GLASS STAINING.

BY DR. P. LIESEGANG.*

Pyro-photography, or fire-proof photography, is the production of transparent glass photographs by means of fusible pigments, the latter being attached to a film rendered sensitive to the action of light. The process is the reverse of the ordinary silver and uranium printing methods. In these the picture is created by exposing the sensitive film to light, and obtained by means of a negative; whereas in the pyro-photographic process the image is secured by screening from light, the positive being produced from a positive, light from light, and shade from shade, and not light from shade, as in the ordinary way. The quickest and cheapest method is to work with a positive *cliche* obtained from a negative by the collodio-chloride method, or to employ paper pictures as diapositives.

The process differs from the ordinary glass and paper printing methods in respect to the undoubted permanent character of its results, the material on which these are formed, and in the circumstance that this latter description of metallic glass is so incorporated with the glass basis by means of extreme heat that the union of the pigments with the glass may be regarded more as cohesive than adhesive. The pigments of the pyro-photographic pictures is indeed of the same composition as that used by the ancients, and to the indestructibility of which we are beholden for the paintings on glass of the middle ages that we at present possess. It is a mixture of siliceous earth with oxide of lead and several difficultly fusible metallic oxides, such as those of cobalt, manganese, iron, and copper. As the substance of the glass plate which serves as a basis for the picture is also a combination of siliceous earth with alkalies and alkaline earth, the glass and picture become incorporated, by subjection to a temperature sufficient to melt the glass, into one homogeneous mass, which, on cooling, possesses a solid, brilliant, and transparent surface, incapable of injury either by mechanical friction or by the action of concentrated acids or caustic alkalies, and impervious even to the influence of any fluorine salt solution.

The process of pyro-photography depends upon two reactions, one chemical and the other physical, which blend one with another; whereas the ordinary photographic method is a purely chemical reaction.

A certain quantity of honey, glycerine, and other substances of a gummy nature are mixed together and dissolved in water, forming, when poured upon a glass plate, a thin, sticky film. This film is dried in a slightly warm temperature (not above 30° Reaumur) and becomes hardened; it still remains, however, hygroscopic, possessing the power of slowly absorbing the moisture from the atmosphere, and again becoming sticky. The addition of a quantity of bichromate salt to this gummy mixture modifies this hygroscopic quality of the film, and renders the same sensitive in such a manner that in those portions where it is exposed more or less to the action of light it loses the property of absorbing moisture, and, instead of returning to its former sticky condition, becomes hard and horny; while at the same time any sheltered portions of the film, according to the degree in which they have been protected from light, reassume their sticky nature in the course of a few minutes in the most delicate and graduated manner. It is this almost incredibly delicate gradation of hygroscopic power, imparted to the film by exposure, in a more or less degree, to light, that is utilized for the production of pyro-photographs.

The gummy mixture upon the glass plate, supplemented by the bichromate salt, and sharply dried as above stated, is placed under a glass diapositive, or under an engraving, lithograph, woodcut, or other picture rendered transparent by means of oil, and exposed in a printing frame from five to fifty minutes in daylight. The sensitiveness of the film is so extraordinarily delicate that, in order to ensure the production of a perfect—or, in other words, a clean and vigorous—picture, it is indispensable to protect the back of the glass in the frame with a dark cloth, as the reflection of a light background tends to weaken the half tones. When the exposed plate is removed from the frame, no trace of an image is visible, as the impression is virtually in the transparent film; as soon, however, as the finely powdered black or brown fusible pigment is dusted over the surface by means of a fine brush, the image appears, with all the vigour and purity of the original, upon the film, and with a suddenness characteristic of the so-called magic photographs. The picture gains in vigour every instant, as long as the application of the pigment is continued. A very particular advantage is inherent with this method of exposure under diapositives. If, for instance, the original *cliche* is somewhat weak, and a more vigorous copy upon glass is desired by means of pyro-photography, it is merely necessary to place the weakly developed glass picture, for the space of a quarter of an hour or so, with its back against the window of the studio, and to expose it thus for a second time. The image in the still sensitive film forms, with its own shadow, a diapositive, and thus, by protecting itself, the shadows absorb increased moisture, and become more sticky, while the lights of the picture increase in hardness, and, therefore, in brilliancy. By repeating the operation of dusting on the pigment, the vigour of the image increases considerably. This self-intensifying of a pyro-photographic glass picture reminds one, to a certain extent, of the process of electrotyping. The intensity of the shadows is not produced at the cost of definition, neither by injury to the delicate half tones; for, as the development of the picture rests only upon the difference existing between the intervals of light and shade, in calculating which difference we may take the stratum of colour of the finest half-tones as the unit of shielded light, and regard the stratum of colour in the deepest shadows as tenfold this unit, then in the second exposure, by an intensification of fifty per cent., the darkening of the deep shadows will amount to five units, and that of the finest half-tones to half a unit, light and shade being proportionately strengthened.

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* *Photographische Archiv.*

This subsequent operation of intensifying may, at the commencement, give the operator some trouble if, previously to the second exposure, he omits to free the reverse side of the glass from any stains or spots upon it; these latter produce imperfections, the appearance of which upon the finished result may cause the operator some amount of chagrin.

When the pyro-photographic print has been developed in the above described manner, only half the work would have been accomplished if one were compelled, as in the process of photographing upon enamel, to proceed with the operations of treating the picture to the action of acid, of covering it with a film of collodion, and of removing and transporting it; these manipulations are, however, unnecessary in the process of pyro-photography. The picture remains upon the glass surface upon which it has been developed, is fixed by means of a simple operation, and washed in water to separate out the chrome salt still remaining therein. It is now quite finished, and may either be at once taken to the glass furnace to be burnt in, or first handed over to the painter for finishing in colours, so as to make it partake of the appearance of a stained painting upon glass. If the picture is to be burnt in, in its ordinary tint, it is first coated with a delicate silky film of enamel, which imparts to the finished image a background of a delicate white. That it is possible to mix with this enamel a small quantity of glass purple, sepia brown, azure blue, red, &c., and thus to obtain an agreeable tint, is a matter of course, as also the tinting of the shadows of the picture by various pigments. When the picture makes its exit from the furnace it possesses all the advantages of glass staining, combined with those of photography.

Although it will be at once understood that pyro-photography will enjoy an unlimited sphere of application in connection with industrial purposes, it will, nevertheless, be of interest to point out the valuable use already made of the new process before it has scarcely been brought to the notice of photographers.

A short time since we had occasion to visit the glass-staining establishment of Messrs. H. Oidtmann and Company, at Aix-la-Chapelle, where, for the last few weeks, the art of pyro-photography has been carried on. Specimens of architectural, artistic, and antiquarian subjects connected with glass-painting, as likewise stained glass windows from the eleventh century down to the present time, had been reproduced by means of the process, and a chronological glass album formed, showing in miniature the different descriptions of painted church windows. We were present while, during the space of an hour, several dozen of these pyro-photographic copies of church windows were prepared without the aid of any apparatus whatever; among others, windows reproduced from photographs by M. Klein, of Vienna, of the *Santa Maria* window in Munich, of mediæval heraldic windows from England and Belgium, of tapestry windows from Gonda, &c., copies of portraits of the Pope, of the kings of Prussia, Princes, &c. Engravings of the Cathedral and Town Hall of Cologne were reproduced so faithfully, in the course of a few minutes, that the inscriptions on the facade of the Town Hall were readily distinguished by means of a magnifier. Albrecht Durer's "Bearing the Cross," and Calcar's "Waking of Lazarus," as likewise the Prussian Ordinance Map, all upon glass, were fitted as windows in the sash frames of the factory.

Correspondence.

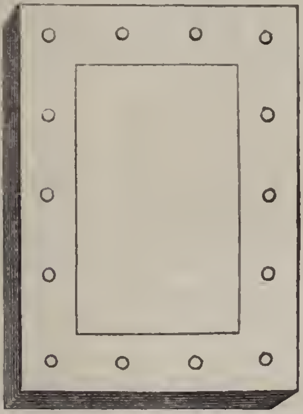
ON SHELLAC AS A VARNISH.

Dear Sir,—It has appeared to me for a long time that one reason of failure in making varnish lies at the beginning, and no trouble rectifies the mistake. If we seek information in our text-books we are probably told to "take a tin bottle holding about two gallons," and, having put various gums and spirit therein, we are "to put it in a warm place," &c. In my opinion this is the error, for if warmth be applied, the spirit takes up matter that it should not, worthless in every way.

Let a clear glass bottle be filled with orange shellac and spirit of wine to-day, to-morrow morning pour off the thin part, and you have all that you ought to expect as useful. Years of experience induce me to assert this positively. To carry out my theory, I would beg anyone interested to go on adding spirits; at last there is a residue that will not yield, but remains viscid. Without the remotest use as varnish, this proves there is something that ought not to be taken up. Heat it from the first, and much is taken up. If other gums require heat, let shellac be treated separately. The first thin wadding is the best. An Amateur.

"PHOTOGRAPHIC NEWS" BLOTTING-PAD.

Sir,—As we all write letters, I send you an account of a blotting-pad that I have just made, and, if called the Photographic News pad, it cannot be patented.



I cut the blotting-paper an inch larger all round than the note-paper, and at intervals all round put little binding gilt affairs—sold in every shop—with a coloured paper border. The effect is capital. A dozen sheets or so are used. Gilt leather might be used, fancy paper, &c.

Nemo.

A TRUSTWORTHY NEGATIVE VARNISH.

Dear Sir,—Will you give the following insertion in your Journal? It is a recipe for a negative varnish, very good and reliable, and easily prepared. I send proportions requisite to make a four-ounce bottle:—

Gum juniper	2 drachms 8 grains
Gum frankincense ...	1 drachm 10 ,,
Alcohol...	4 ounces

Filter through paper.

I use this regularly, and make it for myself. If the gums are good and clean, it makes a clear, pale varnish, and is uniformly good for every purpose, positives and negatives. The negative is to be warmed as usual.

Should this prove of service, I shall be very glad, for the varnish is so easily made, and the ingredients to be procured anywhere.—I remain, yours very truly,

W. S. B., Salopian.

Ticklerton, Church Stretton, Salop.

A GOOD NEGATIVE VARNISH.—RAPID DRY PROCESS.

Dear Sir,—Having read with much interest your article on varnishes in the last number of the Photographic News, I beg to forward you a sandarac formula which I have used (as an amateur) satisfactorily for some years:—

Gum sandarac	½	ounce
Gum thuss	½	,,
Alcohol	6	ounces

This formula was given to me by a photographic artist at Whitby in 1858 or 1859, when I was just beginning photography.

I have one or two negatives taken some years ago and varnished with the above, and they show no signs of cracking or other mischief, although not kept with any particular care. The plate should be well warmed before the application of the varnish, and held before the fire till the spirit is driven off. I have not used it with plates above stereo size, and have made it with eight-ounce alcohol instead of six-ounce, which for large plates perhaps may be better.

Do you know anything of the rapid dry process of M. Soulier, mentioned in p. 339 of last News, or do you think there is any probability of its being made public?—I am, sir, yours faithfully, John B. C. Fox.

July 20th, 1869.

[We have no particulars of M. Soulier's rapid dry process. You will find on p. 232 of our Eleventh Volume particulars of an instantaneous collodio-albumen process employed by M. Ferrier, at one time partner with M. Soulier, in which the chief peculiarity consists in exposure soon after preparation of the plate.—Ed.]

CARBON PROCESSES.

Sir,—In answer to your correspondent, "Carbon Experimenter," it is very easy to show how you are continually suppressing the truth in reference to carbon printing, proof of which I am willing to give if you are willing to allow me space for same in your columns; and awaiting yours, remain yours, &c., John Pouncy.

Dorchester, July 17th, 1869.

[We never suppress the truth in relation to any matter of photographic interest. Our columns are always open to communications which place information of interest or value before our readers.—Ed.]

UNFETTERED CARBON PROCESSES.

Sir,—I sympathise with Mr. Beattie, of Clifton, with a difference. I think that unfettered carbon processes deserve the most attention from photographers; but I think that the process of Mr. Pouncy—by which I mean the greasy process—the most fettered of all the processes which have been proposed. It is not only fettered by patent, but by secresy as well, as I believe that he boasts that no one understands the details of the process but himself. It is also fettered, so far as the public knows anything of it, by the nature of the materials used, for no one would like to live in an atmosphere of turpentine or benzole all day, which must be done if such a process received extensive application.

No one would dream of charging you with suppression of information in regard to carbon printing, although some might, on the other hand, if they did not reflect on the great importance of the subject, consider that it had occupied more than its fair share of your space. I think still, however, there is room for more information, and you might do good service to photographers by devoting a short series of articles to pointing out the unfettered carbon processes, and giving detailed instructions for practising them.

There have been so many processes proposed, and so many patented, and so much discussion about them, that I for one am almost bewildered as to what is whose. I should like to know what I may practise without infringing a patent, and in what manner I may best succeed.

Perhaps I can best make myself clear by an example or two.

1. Is Fargier's process now quite free from patent trammels, and, if so, can you give detailed instructions for practising it?

2. Which is the best mode of producing carbon prints of subjects in black and white, without half-tone, and is the method unfettered?

3. Are the methods of producing carbon prints by means of a powder applied to a sticky surface unfettered, and which is the best?

4. Is Poitevin's process with perchloride of iron and tartaric acid, in which half-tone is obtained without transfer, unfettered, and, if so, what are the details of working it successfully?

I think that information on these and similar points would be of service to many of your readers who, like Mr. Beattie and myself, dislike processes which are fettered by the trammels of the patent law.—Very truly yours,

J. C. F.

[All the information in existence on all these and other carbon processes has already appeared in our pages; we will consider the suggestion, however, of devoting a short series of articles to succinct account of unpatented carbon processes. In the meantime we make a few comments on fettered processes on another page.—Ed.]

ARTISTIC MASKING.

Dear Sir,—Mr. Bovey, in last week's News, referring in his paper on printing to the use of a glass upon which high lights have been stopped out, and a tint is printed upon the paper, says that his plan is somewhat similar to that just published by some one whose name he cannot remember, but to whom he gives precedence for priority of publication, &c.

As I presume he alludes to the specimens of that mode of printing which I exhibited at the South London Photographic Society, I should like to offer a few remarks in connection with the same subject.

And, first, I wish to state that I did not claim any distinction as having done anything in that way for the first time, as I am quite sure the plan must have suggested itself to many thoughtful photographers.

My idea of producing pure lights and a flat tint at the same time on a vignetted photograph was suggested to me many years since by what I have often executed as a lithographic artist, where, instead of printing upon india paper, a tint with high lights was printed upon the lithograph from another stone, and so any depth of tone and colour of tint could be made to suit the subject.

I would now just observe that my plan is essentially different from Mr. Bovey's.

I take a piece of glass, and, laying it on the varnished side of the negative, hold the two together, and by transmitted light stop out by an opaque pigment as much as is necessary to constitute pure high light, and any gradation flowing out of the same.

The painted side of the piece of glass is then registered upon the albuminized silver print, and so, the contact being close, sharp lights must also come quite sharp on the print;

at the same time another power is given by painting on the upper side of the glass to extend softness to any amount.

In using this plan upon a vignetted head, much taste may be shown in the depth of the tint and the colour, either by printing in shade or sunlight; as also that the head may be taken on a small glass and printed on a large piece of paper, and, being afterwards flatted by the tinting, more artistic effects can be produced than the plain, unprinted paper can ever give.—Yours faithfully, Edwin Cocking.

FETTERED PROCESSES.

Sir,—Oblige me with space in your next for a few lines in reply to "A Carbon Experimenter."

Men, before they criticise the opinions of others upon much disputed points in science or history, and particularly to suspect their motives, should first brush the dust from their perceptive faculties, that they may see clearly; and be sure their moral nature is free from twist, that they may judge rightly; and this with people writing under an assumed name should be imperative. Why could not "A. C. E." have taken the same wholesome view of the question that you have done in your appendix to his letter?

His letter is so complete a misapprehension of the truth that I have not time to answer it in detail, but will simply say a few words on what did take place. I exhibited a considerable number of carbon prints by Mr. Blair, on paper, cloth, &c., made in many ways, every one showing points of interest to the experimentalist. I likewise exhibited a number by Mr. Pouncy, on paper, made in two different methods. In both cases (and particularly the latter, because I had seen it) I carefully explained the modes of operation. I passed no "considerable eulogy" on either of them, and had no interest in doing so, beyond a statement in harmony with my understanding of truth.

If I am "eccentric" in believing Mr. Pouncy to have made the first presentable carbon print, I fear your correspondent's logic, with the feeling behind it, will not restore me to the centre. I neither ignored, nor by implication condemned, the processes of Swan, Johnson, and Edwards because they were patented, but, at the time, I believed the methods I was then talking about would ultimately not be patented, and if they were, the patent would not be valid, any more than I believe Swan's to be so; but it is backed up by a company who threaten the law—and all wise people fear the law—and therein lie the fetters I alluded to.

Have I said enough to answer the "grave suspicions" of your correspondent? If not, I can only tell him that if there were less suspicion and more magnanimity in the photographic world, things would go on just as well. Be it understood, I am not blind to the excellence of the productions of the Autotype Company. The third and fourth paragraphs of your correspondent's letter answer themselves.

I am, sir, yours respectfully, John Beattie.

2, *Westbourne Place, Clifton, July 20th,* 1869.

Talk in the Studio.

Johnson's Carbon Process.—At a meeting of the National Photographic Association at Boston, U.S, Mr. W. Morgan Brown practically demonstrated Mr. Johnson's carbon process before the members.

New German Photographic Society.—The new "Society for the Promotion of Photography," formed in Berlin under the presidency of Dr. Vogel, commences, we understand, with sixty members who have seceded from the old Berlin Photographic Society.

Recent Daguerreotype.—At the recent exhibition in Boston Mr. A. Bogardus exhibited a Daguerreotype portrait produced a few days previously expressly for the exhibition.

The Forthcoming Solar Eclipse.—It is stated that Dr. Herman Vogel, who was a member of the North German expedition sent last year to observe the total eclipse of the sun, has been invited to join the new one fitted out by the Government of Washington, to make observations and take photographs of the great solar eclipse of the 7th of August next, which will be visible in the United States.

Invisible Light.—Prof. O. A. Rood says, in *The Journal of the Franklin Institute,* "Many years since, a photograph was made, at Berlin, of the well-known bronze statue of the Amazon; and it was observed that, in the negative, a black streak occurred at the tip of the lance (held by the figure in an almost vertical position), while two other analogous marks appeared in other locations. This picture was sent to Prof. Dove (Berlin), whose investigations in connection with light are widely known, and he came to the conclusion that these markings might be due to electrical discharges going on from prominent points of the figure at the time the picture was taken, and which, though invisible to an observer, would nevertheless, by reason of the high actinic power of electric light, produce an impression on the photographic plate. This conjecture has been fully confirmed by the author, who, in a series of ingenious experiments, proved that electric discharges, entirely invisible to the observer in the presence of daylight, might, nevertheless, produce images of themselves in a picture of the adjacent objects taken at the same time, the photographic plate being relatively more sensitive to these impressions than the human eye. The author describes at length his mode of experimenting; but, without a reproduction of the woodcuts illustrating this paper, it is not possible to enter into more details on this subject."

Albumen.—It frequently happens that among the dried albumen met with in commerce, a variety is met with which is soluble in water, but not coagulated by the application of heat. Dr. Monnier, at Lyons, has succeeded in preparing this modification, and has studied its properties. When white of eggs is slowly evaporated by exposure to the heat of the sun, or rapidly evaporated to dryness on a water bath, after having been previously exposed to strong daylight for a considerable length of time, a modification of albumen is obtained, non-coagulable by heat. A dilute aqueous solution of this non-coagulable albumen is not precipitated by addition of acetic, formic, or tartaric acid, but the addition of these acids (a few drops) restores its coagulability by heat. In order to restore to 0·20 grm. of this dry albumen dissolved in 10 c.c. of water its coagulability by heat, it was sufficient to add 5 milligrammes of solid crystalline acetic acid, dissolved in 0·5 c.c. of water. If as much ammonia was added as exactly suffices to neutralize the acid, the albumen thereby again lost its property of becoming coagulated by the application of heat.—*Deutsche Industrie Zeitung.*

Testing Bees'-wax.—It appears that both yellow and white bees'-wax is met with in the trade largely adulterated with paraffin. In order to detect this, the following process is recommended:—Two grms. of the wax to be experimented upon are placed in a test-tube; and there is added a solution, consisting of 1·5 grms. of solid caustic potassa in about five grms. of distilled water, and the mixture boiled, care being taken to shake the test-tube now and then, whereby a thorough though not quite clear mixture is produced. When the fluid has cooled so far down as nearly to reach the point of solidification of the wax, from six to eight grms. of light oil of petroleum is gradually added, and this thoroughly incorporated with the entire mass, so as to form an emulsion, from which, if well made, the light oil does not separate. Next, an excess of an aqueous solution of acetate of lead is added, which is mixed with the mass by stirring with a glass rod. The addition of this lead salt causes the separation of the light oil of petroleum, and in it will be dissolved any paraffin present in the wax. The same operation is twice repeated with the contents of the test-tube, that is to say, petroleum is again and again added, and allowed to separate; the separated petroleum is placed into a retort, and the light oil removed by distillation. Pure yellow wax loses, by this process, from 14 to 16 per cent.; but wax has been met which lost 57 per cent. in weight; the specific gravity of the residue of adulterated wax was 0·88. When it is desired to obtain the paraffin in pure state, freed from any dissolved wax, this may be effected by cautiously decomposing the wax supposed to be adulterated with paraffin, by means of fuming sulphuric acid, which does not affect paraffin.—*Chemical News.*

Stains and Streaks.—Inexperienced photographers are greatly troubled with these evils, the majority of which are due to the manner of pouring on the developer. Even with skilfu treatment of the developing solution, however, stains are somel times unavoidable; for instance, when the different photographic compounds have not been carefully prepared. The silver bath may have been made too strong in comparison with the iodizing of the collodion, or *vice versâ*, and in such a case stains must inevitably be produced, even if the developer is poured upon and spread over the plate in the most accomplished manner. Another disagreeable phenomenon, which causes some of our colleagues much uneasiness, is the dark streak which commences at the upper end of the plate and continues down to the middle of the same, or even lower. This is the result of a freshly prepared bath and too much alcohol in the developer. In almost every photographic manual it is stated that the addition of alcohol to the developer is only necessary when the bath has become somewhat alcoholic by the sensitizing of several plates. This warning is, however, generally disregarded, and an alcoholic developer is frequently used with a fresh bath; the result is, that as soon as the developer is allowed to run off the plate, in order that the picture may be examined by transparency, these streaks are at once formed. Many obviate the same by carefully washing the plate and removing the developer prior to an inspection of the negative; but by this means it is impossible to watch properly the gradual appearance of the picture, a very necessary part of the operation of developing. For this reason, therefore, no alcohol should be used in the developer when a new bath is employed, a little being added only when the bath has been some time in use, and the quantity afterwards increased when the bath has become appreciably alcoholic. If this precaution is properly attended to, the developer may be poured on and off, and the picture inspected from time to time, without any risk of staining.—*Philadelphia Photographer*.

To Correspondents.

Oxoniensis.—The "cross-barred patches" you describe appear to us as most probably marks of reticulation, which is generally a consequence of too much water in the solvents employed in making the collodion. When there is a tendency to this fault, it is aggravated by immersing the plate in the bath before the film is well set. 2. Yes; we should think it would suit the work admirably. 3. In a few weeks, we believe.

W. H. J.—The instructions given by M. de Constant are to add the coffee solution to the gum solution. If you use the gum and gallic acid solution, mixed, of course, the coffee will be added to the mixture. 2. We have no means of judging but by the report; but we should judge, from the absence of detailed description, that the plates were prepared by the wet collodion process, washed, treated with essence of coffee, and then dried. 3. Mr. England promised us details of the process with which he was experimenting during the spring, if he found, on further practice, that it was sufficiently valuable for general adoption. He is abroad at present, and we have not heard the result of further experience with the process.

Time and Labour.—Photography as a business has not yet been sufficiently long in existence to have acquired, like most trades, established rules as to hours of labour and rates of remuneration. In almost every instance, the principal of an establishment makes his own rules, which form part of his contract with those he employs. In some photographic establishments we know, the duties commence in the morning at eight o'clock, and conclude in the evening at six or seven. In some, business does not commence before nine in the morning. In most cases, the duties of operator and printer involve somewhat longer hours than those of an attendant in reception-room. In winter the hours are of necessity somewhat shorter. The question of dinner-hour is a difficult one. We know it is often uncomfortable, sometimes unwholesome, to snatch hastily a cold dinner in the establishment; but the mid-day hours are of such importance in every part of a photographic establishment that every one must, we think, admit the propriety of foregoing any attempt during summer months to leave the work standing for an hour in order to secure a mid-day dinner. We shall probably have something to say on the subject shortly.

J. W.—The cause of the dullness in the photographs sent is chiefly want of light. Landscapes and architectural subjects are, as a rule, best taken in direct sunshine, but it is imperative that the light shall be sufficiently brilliant to give decision and contrast to the forms, as indicated by light and shadow. A landscape or building taken in a dull, poor light is sure to be tame and flat. Possibly, notwithstanding the poor light, these might have been improved by a little longer exposure and a little more development.

A Beginner.—The three first, so far as we know them, are best. A mixture of either 1 and 2 or 2 and 3, in equal parts, will be found to answer well.

A Beginner (No. 2, Ely).—The card you enclose is not quite sufficiently deeply printed, and is scarcely toned at all. It is much too brown even for an agreeable warm tone.

B. A. asks us for a "quick process for taking children." As a rule, the quickest available process would be adopted by every one, both for taking children and grown up persons. The wet collodion process with bromo-iodized collodion and iron development, when everything is in good condition, is the quickest process known. A nitrate bath containing thirty-five grains to the ounce of water, nearly new, and as nearly neutral as possible; a good bromo-iodized collodion which has been mixed a few weeks; a strong iron developer containing (say) forty grains of protosulphate of iron and twenty minims of acetic acid in an ounce of water, will give you very rapid results, and will require care to avoid fog, a contingency always to be risked when rapidity is gained.

Galbraith and Co.—Delayed unavoidably, but not forgotten.

M. L. F.—Mr. Blair has not patented any of the processes he describes. The process in which turpentine is used to give transparency to the paper backing of tissue will give you very good results for such a subject as you name, as the slight texture will not interfere injuriously with the definition of old architecture. The patented carbon tissue will answer well.

C. B. Riversdale.—It is possible, of course, that the spots might arise from such as pinholes as you suggest. From some cause it is evident the spots are centres of increased reduction of silver. Sometimes rough glasses which have been cleaned with an alkali will cause similar spots.

J. W. H. A.—Most samples of permanent sensitive paper are somewhat more difficult to tone than freshly excited paper, chiefly for this reason: to make sensitive paper keep, it is necessary to deprive it as much as possible of free nitrate of silver; and paper deprived of free nitrate does not tone so readily as paper on which a little free nitrate is left. Prints made on permanent sensitive paper do not require washing, but should be simply rinsed, in order to moisten them uniformly, and then placed in the toning bath. The toning bath made with carbonate of lime, which we generally use when we have to improvise a bath for immediate use, is made as follows:—The chloride of gold is kept in concentrated alcoholic solution, one grain in a drachm of alcohol. A piece of carbonate of lime, about the size of a pea, is taken, and a drachm of concentrated gold solution poured on it, and rubbed up into cream; to this four or five ounces of water are added, and when the solution becomes colourless, which will be in about ten minutes, it is ready for toning. It will keep in the dark for some time, but is less active if long kept. In winter warm water is used.

J. P. F. (Forest Hill).—We presume that, in speaking of small white spots in the dark parts of negatives seen when held up to the light, you mean transparent spots or pinholes. We are not quite sure, however, whether you mean these or white opaque spots. Transparent spots or pinholes, arising as you describe, are doubtless due to supersaturation of the bath with iodo-nitrate of silver, which has a great tendency to produce pinholes in hot weather. The remedies are various. The first and simplest consists in diluting the bath. Take a quantity of distilled water, equal to the bath, and pour the nitrate solution slowly into it. This will cause turbidity, from precipitation of iodide of silver. Filter carefully, and then add sufficient nitrate of silver to make the solution of the proper strength. To avoid the ready recurrence of the evil, keep the bath as cool as possible.

J. M.—We certainly should not counsel the use of dry plates for any purpose where wet was available. Although some skilful photographers secure very perfect results with dry plates, as a rule wet plates give better negatives, as well as quicker. We have seen instantaneous pictures produced on dry plates of favourable subjects in a good light; but wet plates would, under the same circumstances, have given better results. The rapid plates of Dr. Hill Norris are the most sensitive dry plates we know; but the mode of preparing them is a secret. Mr. Gordon's gum process gives the best results, with the least exposure, of any published process we know. Bromide of cadmium is the most soluble bromide, and therefore the most soluble for addition to collodion in large proportion.

Young.—Your difficulty in getting the developer to flow easily is probably due to the use of a horny, repellent collodion. Immersing the plate in the nitrate bath soon after it is coated is one remedy. The addition to each ounce of collodion of a drop or two of water is another remedy. The use of more alcohol in the developer—or, better still, the addition of a little sugar—will also help you. Carl Meinerth's developer appeared in our number for February 5th this year. 2. It is a matter for experimental trial. 3. We are familiar with the curious fact that a much longer exposure is necessary in producing photographs on black plates or black glass. The subject is worth further attention.

Sarony and Co.—Received.

Marion and Co.—Received.

Several Correspondents in our next.

Some Reviews are compelled to stand over until our next.

THE PHOTOGRAPHIC NEWS.

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THE FETTERS OF PATENT LAW.

On another page we publish two letters from esteemed correspondents on the subject of Patent Law and fettered processes, from the tenor of which it seems desirable that we should make our views on the advantages of the fetters of patent law over other forms of fetter a little clearer.

Our argument in last week's article was to the effect that whilst the fetters of ignorance and secresy were effectual barriers to progress, by the operation of the patent law the public must be benefitted, because the publication of improvements is the absolute basis of that law. Our correspondent "Ennel" would agree with our position if the patent law were what it ought to be; but the imperfection of the law, he seems to think, renders it valueless. Admitting fully the imperfection of the patent law, we think our correspondent will readily see that it does not invalidate our argument. The very condition upon which a claimant obtains letters patent is that he shall fully describe his invention for the benefit of the public. Now, however unsatisfactory may be the working of patent laws in many respects as regards the interests of the inventor, so far as the public are concerned this necessity for publication is an undoubted boon, and whether the patent obtained be valid or invalid, the public are benefitted by the disclosure of some new thing, unless, indeed, the patentee deliberately evade the law, and stultify his own object by keeping back some essential part of his improvement.

This brings us to an objection of a "Carbon Experimentor," who alleges that patentees do not fully divulge details of their improvements in their specifications, and mentions a specific instance in illustration. It is unnecessary to comment on individual cases in answering these remarks. It is sufficient to say that in all cases reticence in regard to essential parts of a process is fatal to the validity of a patent; and if it be shown that a specification does not describe the method to be protected with sufficient clearness and detail to enable a workman of ordinary skill and intelligence to produce the desired results, the patent becomes of none effect, and the patentee loses his protection. On this point Mr. Baron Alderson has stated the law most explicitly. He says:—

"It is most important that patentees should be taught that they are bound to set out fully and fairly what their invention is; for suppose a person were to make an invention, and get a right of making it for fourteen years, to the exclusion of all other persons, it would be a very great hardship upon the public if he were allowed to state his specification in such a way that, at the expiration of the term of his patent, he might laugh at the public, and say, 'I have had the benefit of my patent for fourteen years, but you, the public, shall not now carry my invention into effect, for I have not shown you how it is done. I have got my secret, and I will keep it.'" And he adds, "Further, if a patentee is acquainted with any *particular mode by which his invention may be most conveniently carried into effect*, he ought to state it in his specification." Chief Justice Abbott has held "that it is the duty of any one to whom a patent is granted to point out in his specification the plainest and most easy way of producing that for which he claims a monopoly, *and to make the public acquainted with the mode which he himself adopts.*"

It will be seen that there is no room left for doubt as to whether an inventor can possess the protection of a patent and secresy at one and the same time. Secresy absolutely invalidates a patent.

We perfectly agree with our correspondent "Ennel" as to the urgent need for sweeping improvement in our patent laws, but he is in error in some of his views on the subject. It is strictly true that no process can become the subject of a patent which is not new. The *form* of patent protection can, it is true, be obtained for old processes, but the absence of novelty invalidates a patent, and an invalid patent is in effect no patent. Letters patent invariably contain a clause voiding the grant in case the thing claimed "is not a *new* invention as to the public use and exercise thereof." It is perfectly true, as a "Carbon Experimentalist" states, that letters patent are not unfrequently obtained for improvements which have already been published, but such patents are *de facto* void, and if the evidence of want of novelty be clear, no patentee would be foolish enough to attempt to get an injunction for infringement. A question of doubtful novelty could, of course, only be determined by a proper tribunal.

It is not quite true, as "Ennel" states, that patents are granted without any examination whatever. The Act (Patent Law Amendment Act, 1852) provides for some examination, and states for this purpose that "the provisional specification shall be referred to the law officer, who shall be at liberty to call to his aid such scientific or other person as he may think fit;" and although the examination actually made is much too limited and comparatively worthless, it does continually happen that protection of a patent is refused, as our correspondent may ascertain from the annual reports of the commissioners of patents. We have several times published specifications in our pages of claims to which letters patent have been refused. Nevertheless, we hold that a much more searching enquiry by a competent board; much more simple and less costly machinery, for the protection of the real inventor; and more simple means of setting aside patents inequitably obtained, together with various other improvements, are imperatively required to make the patent laws properly serviceable to the inventor and the public; and these reforms we hope will be shortly secured.

Critical Notices.

"OVER-THE-SEA"; Photographed from Nature in Several Negatives, by ROBINSON and CHERRILL, Tunbridge Wells. "SEA-GULLS"; A Photograph from Nature, by ROBINSON and CHERRILL. (London: Marion and Co., Soho Square.)

"OVER-THE-SEA" is a combination photograph, twenty-two inches by sixteen inches in size, and thus far resembles several of Mr. Robinson's recent photographic compositions, such as "Autumn," "Sleep," "Returning Home," &c.; but in size the similarity begins and ends. Hitherto his subjects have belonged to inland landscape effects—chiefly rustic—or to home scenes, the grandeur of the sea and its belongings having hitherto been neglected in what are termed "combination photographs." Indeed, with few exceptions, large photographs of the sea have not been attempted. Legray's early attempts were sufficiently distinctive and unusual to be remembered now—nearly a score of years after their issue—by all old photographers. The fine Italian pictures of Col. Stuart Wortley, some views of Havre Harbour by a local photographer, and Mr. Blanchard's views of the engagement of the Channel Fleet are the chief sea-views we remember of larger size than stereo or cabinet photographs.

Instantaneity is, of course, an imperative condition of marine photography, and that is often incompatible with doing justice to foreground objects in large pictures. To secure, therefore, all that is necessary in pictorial effect, a good subject must be taken piecemeal, and printed by the combination method; and this plan has been adopted on the picture before us.

A wide expanse of sea intersected at the right-hand corner by rocks which look very like Beachy Head, and some old railings or "groins," is surmounted by a "mackerel" sky variegated by some fine stratus clouds, behind which the sun is setting, the luminous break in the sky serving to show the position of the sun, although it is veiled by clouds. The sun, though hidden in the sky from the observer, is reflected in the waters, the bright streak of light dancing on the waves coming up to the foreground deriving additional luminousness from its juxtaposition with the dark railings and cliff. The light on the waters is repeated and carried off by a couple of fine white sea-gulls hovering close upon the shore. The foreground is an undulating bank covered with thicket and bracken, wild-flower, briar, and fern. On the bank are a couple of rustic little children, and these give the title to the picture. One of them, sheltering her eyes with her hands from the strong light of the setting sun, gazes anxiously far over the sea, apparently for the boat which is not yet in sight, whilst the other little one is seated at her side. The light is admirably spread by the dress of the standing figure, which receives the direct rays of the setting sun. The perfect and brilliant photography aid materially in giving full value to the admirable balance of light and shade.

Although we have said the picture is produced from several negatives, we would scarcely venture to guess at what points the junctions occur, or how many negatives have been employed. The sea, and sky, and rocks, and birds, all have the appearance of being in one huge instantaneous negative. The foreground and the figures are probably from separate negatives, but the whole is so harmonious, each part bearing its due relation to, and being in perfect keeping with, every other part, that we cease to regard the work as a thing of separate elements, and simply see a complete and charming picture. As we look at it—and look in vain for manifest joints or patches—we are reminded of a time, many years ago, when Mr. Robinson, as a young painter, with modest tentative effort, first made essay of the plasticity of photography for pictorial purposes, not to be secured in single negatives, that another gentleman, who had just introduced himself to the photographic world with the title of "artist," cried out, "Patchwork!" and obtained a momentary attention from those who were jealous of the reputation of photography. The promise which had seemed to attach to the *soi-disant* "artist" having failed, he passed out of notice or recognition, but the production of one such piece of patchwork as that before us would have made his reputation for life. The love of art and photography which is only from the lip outwards ends in failure and oblivion. The love of art and photography which is in the heart and brain, and finds its expression in genuine work, grows in power, position, and all that makes life honourable.

The "Sea-gulls" is, so far as we can see, from a single negative sixteen inches by twelve inches, and is a wonderfully charming and harmonious piece of instantaneous photography. An expanse of sea without foreground, but with a rock and stretch of shore intersecting the picture at the right-hand corner in the middle distance. A sky of quiet tint, with a very effective bank of stratus cloud stretching the whole length of the picture. Variety is given to the sea by the streak of light reflected from the sun behind the clouds. But the wonderful effect of the picture is produced by a flight of kittiwakes or sea-gulls, which have been caught in most admirable arrangement. Half-a-dozen or more of these stretch over the full front of the picture, their spread wings measuring an inch across, their plumage well made out. The rest gradually stretch away, forming an irregular curved wedge, from the front to the distance, some white against the sea, some white against the grey bank of cloud that immediately surmounts it. Upwards of fifty of the gulls may be distinctly counted. What especial device has been employed to secure this difficult but effective picture, or whether any device beyond the skilful use of well-known appliances, we cannot say. Perhaps some of those gentlemen who some time ago thought all the "dodges" of combination so well known to ordinary intelligent photographers as to be scarcely worth reading a paper upon, will help with some hints here.

PORTRAITS AND PICTURES. By VALENTINE BLANCHARD.

OF all the English portraitists who have worked under the inspiration of the works of M. Adam-Salomon, Mr. Blanchard has, we think, been most successful. We have not used the word imitate, for that, at least in Mr. Blanchard's case, would scarcely correctly indicate the fact. His work is like that of the great Frenchman in many respects, but with a difference; the difference being marked by distinct individuality. Before us are several of the finest examples of portraiture we have ever seen: photographs in which pictorial value, characteristic likeness, and rare technical photographic excellence are united most perfectly. Some studies of a pretty little child, in somewhat antique costume, with accessories of a similar period, are exceedingly charming as pictures: good composition, admirable lighting, exquisite delicacy and texture, and fine modelling, all giving force and value to a pretty idea quaintly carried out.

PHOTOGRAPHS OF IRISH SCENERY. By GALBRAITH and JENNINGS, Belfast. (London: Marion and Co., and C. E. Elliott.)

IT has often struck us as matter for surprise and regret that the rare landscape beauties of Ireland have received so little attention from the photographer. With the exception of a few stereoscopic views, produced professionally, and a few larger pictures by amateurs—amongst whom Sir Jocelyn Coghill, Mr. Brownrigg, and a few others take first position—the far-famed beauties of the Emerald Isle have been strangely neglected or overlooked by photographers. An admirable series of twelve by ten pictures, by Mr. Payne Jennings, now before us, is an excellent instalment towards a complete removal of this reproach. The greater number of views under notice are in Glenavna, in County Antrim, the seat of Mr. W. Valentine, a well-known art patron in Ireland. A more charming spot for a lover of natural beauty cannot be conceived. A lovely stream winds its way amid the most glorious wealth of overhanging and tangled foliage, now gliding quietly between precipitous banks, then bursting into rapids hurrying over rock and boulder; the banks on either side, richly wooded, either providing thick and delightful shade, or affording pretty glimpses through sunlit vistas. Some scenes in Tollymore Park, County Down, the seat of the Earl of Roden, are also very beautiful. There is considerable uniformity of excellence in the pictures. Mr. Jennings has selected his points of views with an appreciative eye, so as to obtain fine pictorial effect; and the photography is technically very good. In some instances a little more exposure would have secured additional feeling of space and atmosphere, and, consequently, more tone and harmony; but the majority of the pictures are excellent, and we are glad to learn that Mr. Jennings intends to prosecute his labours further in giving a photographic expression to the beauties of Ireland.

PHOTOGRAPHIC STUDIES AND SCENERY. By H. J. Godbold, Hastings.

The pictures before us consist of several very charming cabinet-sized studies of portraiture, groups, and landscapes, in all of which the infusion of considerable art feeling is a prevalent characteristic. One entitled "Child and Swan" is very pretty. A little child, standing on the bank of a piece of water, is watching a swan, which, remaining close to the shore, "floats double, swan and shadow," and with stately port gazes on the child. Reflections of foliage, railings, &c., in the water, all aid in producing a pretty little picture. A lady standing in a Gothic doorway, and another passing from a garden up a few steps to a doorway, illustrate how valuable chance backgrounds, when selected with judgment, may contribute to pictorial effect in portraiture. Some views in Fairlight Glen, and other landscapes, are distinguished by the same taste and feeling for pictorial selection.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Photography and Ruffianism—Photography in Court—Cyanide Poisoning—Photography and Fine Art Copyright—Trammels of Patent Law—Sea Gulls—Photographing Invisible Objects—Photographic Company, Limited—Holiday Prizes—Societies.

"The defendant was locked up in default." I read the sentence with intense pleasure at the conclusion of a "police case" in the columns of a daily paper. A gentleman passing down a populous thoroughfare is pressed by a touter to enter a studio to sit for a portrait, which should not cost him more than sixpence. When complete, a demand of five-and-sixpence is made for the portrait in case, subsequently reduced to three-and-sixpence in a cheaper case. The gentleman is unwilling to pay more than two shillings, which, being refused, he beats a retreat, when the "photographer," resorting to the ruffian's argument, strikes him, with his fist, on the eye, making it bleed. So says the complainant in his evidence. The story seems incredible that in one of the main thoroughfares of the metropolis of the world, in broad daylight, a sitter should be felled by an artist because they do not agree as to the price of a photograph. Having thus "settled" his customer, the photographer appears to have called in a witness, with what view does not appear; but the said witness—a "cab proprietor"—gives evidence of being called in by the photographer, whom he knew, and finding the complainant, whom he also knew, sitting in a chair with a bleeding eye. Not the least curious part of the business is the fact that a gentleman, described as a member of the Royal College of Surgeons, should have been tempted into a studio with the promise of a portrait which "should not cost more than sixpence." The magistrate inflicted a fine of forty shillings, which was increased, by the addition of costs, to an amount of three guineas. Sixpenny portraits, even with the enormous increment for cases, do not appear to have been profitable, for the defendant was locked up in default. The records of such cases do not make men feel very proud of the profession of "photographer."

Photography seems to have periodic occasions of unusual prominence in criminal courts. In the recent trial of Lord Carington, for an assault on Mr. Grenville Murray, a photograph appears to have played an important part. An assistant of Mr. Poole, the fashionable tailor, being fond of the photographs of great men, procured one of Mr. Murray from that gentleman's valet, who alleged in court that although the card was a good likeness it was better-looking than the original, a contradiction to the common assertion that photographic portraiture is justice without mercy. It was sufficiently like, however, to enable Lord Carington to identify, by its aid, the original, and so make sure of his man in committing the assault which has now been more than a nine days' wonder. In the coroner's court, too, I see with regret that photography appears: a solution of cyanide, prepared for photography, left inadvertently in a cupboard, fell in the way of a man desponding through drink, debt, and error, and he was shortly after found dead, having taken "a great quantity of cyanide of potassium." I am afraid familiarity makes us all too careless in leaving photographic poisons accessible, but cases like this bring at least new resolves to use more precaution in such matters.

I am glad to see that the Fine Arts Copyright Bill is withdrawn for this session. The position of photography in it was most unsatisfactory. I heard it rumoured that if photographers grumbled, the probability was that photography would be struck out of the provisions of the law altogether, on which I could not help exclaiming, "A consummation devoutly to be wished!" Surely it could not be regarded as a boon that photographers should be deprived of copyright in their works, and the copyright should vest in those to whom it could be of little or no value. To portrait photographers the operations of the Bill must have been odious. It has been alleged that the Bill was a good one for art generally; but I must confess that it appeared to me to have been framed rather with a view to the interests of picture-dealers than any one else. How could it serve the interest of the painter, for instance, to provide that the copyright of his picture should pass, as a matter of course, with the sale of the picture? If the copyright or property in the idea, as distinct from its individual embodiment, were regarded as belonging, as a matter of course, to the artist who created it, and become the matter of special stipulation, he would often receive an extra sum for it; whereas if it pass, as a matter of course, with the picture, it will often become the property of the picture-dealer, without either artist or art-patron receiving any advantage whatever.

The trammels of the patent law seem to form a stock subject for grumbling about. Glancing at the history of photographic patents, I can scarcely find a single instance in which a patent has trammelled a photographic invention of any kind; nor can I find, as a rule, that photographic patents have been of any service to any one except the public. The first photographic patentee—or, rather, the owner of the first photographic patent—Mr. Beard, was ruined, it is alleged, by gaining lawsuits in defence of his patent rights. Since the invention of photography, a little less than thirty years ago, there have been, I believe, between two and three thousand photographic patents obtained or applied for. Now, whilst out of this large number I don't think there is one at this moment which operates as a barrier to the development of any branch of photographic industry, there must of necessity have been a large amount of valuable information and suggestion obtained from the specifications, the only ground for regret being that, in many instances, it should have been published at so much cost and so little gain to the patentee. It would be a somewhat interesting thing to ascertain if a single instance exists in which a person can say, "I am fully prepared to work such and such a process largely on terms of mutual benefit to myself and the public, but I am prevented by the patent fetters which surround it, and the prohibitory terms of the patentee."

I have seen a wonderful instantaneous picture recently, produced by Messrs. Robinson and Cherrill. The size of the picture is sixteen inches by twelve; and the subject includes sea, rock, sky, and clouds, together with a magnificent flight of about fifty sea-gulls, ranging in size from over half an inch in the foreground to little more than a speck in the distance, or rather middle distance. The flight of gulls intersects both sea and sky, and forbids the notion of double printing having been employed. It is a splendid instance of rapidity. That it is by the ordinary wet collodion process I have been given to understand, but whether there is anything especial in the lens, collodion, developer, &c., I do not know. It would be interesting if Messrs. Robinson and Cherrill would communicate any peculiarities in the mode of working in producing such a picture.

The echoes of the spirit photograph discussion have almost passed away, and have left few people with a conviction other than that a gross imposture had been successfully carried on for some time in the States. The question of the truth of "spiritualism" is one which need not and should not be raised in discussing a scientific subject; but I think that dangerous scientific ground was taken by some of those who denied the possibility of photographing ghosts because they were not seen. Such an argument is based upon the idea that the light which illuminates bodies and makes them visible is the agency which produces photographic action. We so necessarily work as though light were that agency, that we are apt to forget that it is *actinism* which produces our pictures. As a rule, it is so intimately associated with light, that we regard the latter as our sole guide in working; yet it is worth remembering that we may have illumination without actinism, and actinism without illumination; and that, supposing the existence and possible presence of a ghost to be established, there is no reason why its image might not be impressed upon a sensitive plate, although it were not visible to the eye.

I have received a prospectus of a new "Photographic Company, Limited," and I am courteously informed, by a circular which accompanies it, that "licencees or agents may obtain distinction and extend their businesses by taking a licence (ten guineas for the first year, and five guineas for each following year)." And, further, that "a new field of labour may be gained, *with* the active friendship of *the* Company, and new business profits will reduce the licence money to less than a tenth of the new profits." I do not quite understand the latter part of the inducement held out, but it is evidently intended to be something very tempting, and, with the prospect of obtaining distinction, extension of business, a new field of labour, and an active friendship, I do not think one should quibble about terms, either verbal or monetary. With a deep interest in all forms of commercial photographic enterprise, I think, in this instance, I shall wait a little before investing in shares, or agency, or licence. The prospectus commences by stating that the Company is "being formed," but, notwithstanding this intimation of its embryo condition, the prospectus goes on to state that certain patents and certain processes have already been purchased, a step somewhat premature, I should have thought, for a still unformed company. It would be unfair, perhaps, to doubt the alleged value or importance of the purchases mentioned; but it cannot be wrong to say that at present evidence is wanting of their value and importance. If all prove true that is stated, there will be a real gain to photography, although its future may not rest entirely on these novelties. Let us heartily hope that no one will be disappointed.

Photographic enterprise takes various allied forms. I have before me another printed document issued by a northern photographer, setting forth the advantages which his clients may secure. He offers them "holiday prizes" for a certain day. All who sit on that day will receive tickets in a lottery, and secure a chance in the distribution of jewellery, consisting of pins, rings, chains, watch, &c., and all this is to be obtained in conjunction with first-rate portraits at four shillings a dozen. I am afraid that the local enterprise offers more solid and certain advantages than the general and larger scheme just mentioned.

Most of the societies have closed their winter sessions. The new Bristol Society is active. At its recent meeting Mr. Beattie described and commented on the various carbon processes. He also proved his sincerity in objecting to unjust patents, by offering to contribute a sum of five pounds towards testing or opposing unjust patents. As I have already said, I do not think there is a patent in existence which is pressing unjustly on photographers; and I think if an an able and honourable man like Mr. Beattie were to fully examine the subject he would come to a similar conclusion.

The Liverpool Society still meets to plan excursions, and then to chat about them, and show the successes obtained. Such meetings are capital evidences of unity and vitality in the Society.

All the London Societies are in recess; but the Council of the Parent, or rather a Committee of the Council, is actively engaged in looking after its interests financially; and that department will be materially aided, I have heard, by a donation from Dr. Diamond of a sum of between forty and fifty pounds. I congratulate the donor and donee on such a pleasant transaction.

MASKS AND FACES.

BY PROTAGORAS.

PART V.—PHYSIOGNOMY IN THE GLASS ROOM.

IN my last paper, when recommending physiognomical knowledge as a desirable element in an operator's qualification, I promised that I would attempt to show such knowledge in practice. With many persons one fact is worth a dozen arguments, therefore I shall drop reasoning and try illustration. Let us take two operators, each equally skilful, the difference between them being that one has some physiognomical acquirement which he calls to his aid in managing his sitters, the other is without this knowledge. We shall imagine the same person to sit to each, and we will observe the different proceeding of the two. Let us take a character sufficiently marked to give scope for definite observation. I have such an individual in my mind's eye just now. He is a man about forty years of age, fair complexion, average bulk and height, inclined to be corpulent, slightly bald, bluish-grey eyes, broad flat face, short nose slightly inclined to turn-up, wide mouth and chin, compressed lips, and a knit in the brow He carries himself erect, throwing his belly outwards. He walks with a firm, decided step, and has a slight swagger with the shoulders. He is well-dressed, and, from his general bearing, is evidently a man of means. His confident manner and slightly browned complexion indicate that he has been about a good deal in the world.

This is no fancy portrait, but that of a real individual. His type is so common that most of my readers must be able to call to their minds such a person. He may be a successful merchant, a pushing man of business, or a go-ahead gentleman farmer. He is a man who likes to have his own way, and will always have it if he can. He does not like to be contradicted, and quickly gets into a temper. On the whole he is not a bad sort of man; but, unless properly approached, frequently gets into trouble from his self-asserting manner. Such is the sitter whose portrait has to be taken. We will first introduce him into the portrait room of an operator who takes good average photographs, and whose mind is always intent on his collodion, developer, and bath. He understands good lighting, is not unmindful of a graceful position, and prides himself on his work. Our sitter enters the glass room, and something like the following conversation takes place :—

Operator (who is pleasant and obliging).—"Good morning, sir. I understand you wish to have your carte-de-visite taken. Have you any preference for position?"

Sitter.—"Yes; I wish to be taken sitting."

Operator.—"Sitting! I think it would be much better to take you standing."

Sitter.—"No; I shall be sitting. The last time I had my portrait taken it was standing, and I did not like it at all. Have you an arm chair?"

Operator.—"Certainly, but I really—"

Sitter (flinging himself into the chair, and sitting all of a heap).—"There, sir, I'll be taken like this, as I am in the habit of sitting at home. The last time they made me stand as stiff as a post, with my chin stuck up in the air. It was a perfect caricature."

Operator.—"Well, sir, I will take you so, if you insist upon it, but I cannot help suggesting that standing would be more becoming and more natural."

Sitter.—"How can you tell which is my most natural position? I should think I ought to know more about it than you. I tell you this is how my friends see me, and if you do not take me in this way, I shall not be taken at all." (The sitter is decidedly getting angry.)

Operator.—"Very well, sir, I will take you sitting. Will you please look away from the camera at this dark velvet?"

Sitter.—"I don't want a three-quarter face; I had that last time, and it was a failure. If you take two positions, I want a full face in one and a profile in the other."

The operator, who sees at a glance that neither of these views of the face is the best, yields rather than risk further altercation. He proceeds to adjust the head rest.

Sitter (peremptorily).—"I won't have that at the back of my head; that was the thing that made me look so stiff before."

Operator (mildly expostulates).—"I am afraid, sir, you will move your head unless I provide a support."

Sitter.—"I can keep my head quite steady without having it screwed in a vice. I am not a child."

Operator yields again.—"Will you please look at the lens? Now, sir, quite steady. (Exposes). Thank you, sir."

A second position is arranged, and the profile taken. When the negatives are developed, both the portraits are found to be "moved." Another plate is prepared, and the operator returns rather exultingly.

Operator.—"It is just as I expected; both of the portraits are indistinct, from movement of the head. I must take you again, and this time you must excuse me if I insist on using the head-rest."

The sitter submits with an ill-grace. He sits again, giving a savage expression, but is quite still. The operator bows him out, and is glad to get rid of him. The sitter escapes, vowing he would rather any time have a tooth extracted than have his photograph taken. When the proofs are submitted, he declares they are both total failures. Though both are good photographs, they are wretched likenesses. The full view makes the broad flat face look broader and flatter than it is. The light grey eyes have too much light on them, and are scarcely seen. The compressed lips have extended the wide mouth nearly across the face. The profile is not much better; the retreating forehead, bald head, short stumpy nose, and projecting lower jaw make him look as if he were a gorilla. It is not surprising that the portraits are condemned, and the photographer declared to be a person utterly incompetent to produce a portrait fit to be seen.

Any professional photographer will admit that such a sitter is a difficult one to manage, even if he were as complaisant as in this case we have found him disagreeable. The operator was to be pitied rather than blamed. The failure arose from the overbearing conduct of the sitter, but the blame is laid on the photographer's shoulders. The loss is also clearly his. Now let us see how this sitter might be managed by a different operator; one who, in addition to his knowledge of his chemicals, has also some knowledge of human nature.

The sitter enters the glass room, and the operator looks keenly at him. These are something like the thoughts that rush through his mind :—"A consequential person, this —large self-esteem : must be humoured, not contradicted ;— likes to show off : must be managed—won't do to say much —must apparently let him have all his own way—must be firm, however, without letting him see it." Having thus rapidly reckoned him up, the operator has another glance at his sitter, to see how he is to treat him photographically. "Broad face—wide mouth—light eyes : a full face won't do ; —bad nose, forehead, and chin : profile won't do—varieties of three-quarter face best ;—good chest and body—bad legs— trowsers too light, baggy at the knees—feet large : full length won't do—three-quarter figure best ;—short neck— shoulders round—full corporation : sitting won't do—must stand."

In this quick manner the operator determines what he intends to do. The next thing is to get the sitter to permit him to carry out his ideas.

Operator.—"Good morning, sir. You wish to have your carte-de-visite taken. Let me see you standing here, please."

Sitter.—"But I don't wish to stand; I want to be taken sitting. You can take me sitting, can you not?"

Operator.—"Certainly, sir; I will take you in any way you desire. Will you please take a seat, and let me see you sitting? Thank you, sir. Now will you rise, and let me see you standing? Thank you, sir. Now, sir, waiving my own judgment as to which is the most becoming position to do you justice, I am prepared to take your portrait in any way you wish. Of course I have my own private opinion which is best."

Sitter (who is rather non-plussed by the cool self-possession of the operator).—"My desire to be taken sitting is because when I was taken standing I was made to look so stiff; my chin was stuck up in the air, and the position was not comfortable nor natural."

Operator.—"Very likely; but I see no reason why your standing should have caused the failure. If you had sat, the probability is that the portrait would have been even worse."

Sitter.—"Which do you consider the best position for people—to sit or stand?"

Operator.—"It depends on circumstances; chiefly on the figure of the individual."

Sitter.—"Well, in my case, do you think I ought to sit or stand?"

Operator.—"A more favourable portrait of you, sir, may be taken standing than sitting."

Sitter.—"Why?"

Operator.—"When a person is inclined to be stout they usually look shorter and broader when sitting than standing. If the neck is short, the head appears more sunken into the shoulders when sitting than standing. You have a good figure and carriage, but when sitting they are quite lost. There are other reasons, also, which show the desirability of your standing."

Sitter.—"I never thought it made the least difference; but as you appear to understand your business, you may place me as you think best; only give me a good portrait."

In this manner the sitter becomes disarmed, and his foolish prejudices are subdued, if not removed. Properly managed, he submits to be put in a becoming position, to use the head-rest, and even gives a pleasant expression. The portrait taken under these circumstances is pronounced a success, and the sitter strongly recommends the operator as a very clever fellow.

PHOTO-ENGRAVING ON COPPER.

BY DR. JACOBSEN.*

Several processes have recently been brought forward for preparing, by means of photography, engravings upon copper, from which prints may be obtained in the printing-press. In the Prussian State printing office at Berlin the following method is used, among other purposes, for printing upon bank-notes the Royal Arms and a notice referring to the punishment of forgers; the former being produced from a deeply-etched metal plate, as in copper-plate printing, and the latter from a relief by means of ordinary type-printing. Well-polished copper-plates are used for the purpose, and these are covered with an even coating of asphalte, and exposed to light, either under a negative or positive *cliché*.

The asphalte best suited for the purpose is that which yields a highly brilliant fracture. This material is broken into small fragments, dissolved in turpentine, and the solution diluted with collodion. The insoluble particles are allowed to subside, and are separated by filtration through cotton-wool, the solution having the consistence of ordinary collodion; this is applied to the copper-plates, and allowed to dry at a gentle temperature. It is very necessary to see that no insoluble particles are deposited upon the plate.

The exposure of the prepared plates takes place in diffused daylight, and continues for three to five days, although, by modifying the asphalte solution by the addition of certain substances, the period of exposure may be reduced to four to six hours. The *cliché* for printing from should be composed of a thick, permanent collodion, and, if possible, should be separated under water from its glass support, and laid alone upon the asphalte surface. By exposure to light, the unsheltered parts of asphalte become insoluble, while the other portions retain their solubility.

The collodion film is now removed by washing in water, and the plate then treated with a mixture of turpentine and water, which washes away the asphalte, and bares the copper surface wherever the light has not acted upon the surface. The operation of etching is next proceeded with. The reverse side of the copper-plate having been coated with asphalte, it is placed in dilute muriatic acid, and the asphalte afterwards removed. The design is now obtained, engraved in the copper-plate. The operation of etching requires considerable skill on the part of the operator, which can only be acquired after much experience.

Engraved designs obtained in this manner may, if it is necessary, be reversed by means of the electrotype process.

PHOTOGRAPHIC ENAMELS; OR, PYRO-PHOTOGRAPHY.

M. L. de Lucy-Fossarieu's Process.†

The sensitive coating mixture is compounded from the following solutions:—

First Bottle.—A quantity of borax is allowed to stand for several days in a vessel containing water, in order that a saturated solution may be obtained.

Second Bottle contains a solution of—

White sugar	50 grammes
Gum arabic	5 ,,
Water	300 ,,

When the gum is completely dissolved, thirty grammes of the borax solution (No. 1 bottle) are added, and the mixture well shaken.

Third Bottle, of thirty grammes capacity—

Honey	6 grammes
Solution of borax	a few drops
Water ...	as much as will fill the bottle.

Fourth Bottle.—A saturated solution of bichromate of ammonium.

The solutions are mixed in the dark, in the following proportions:—

Of the borax solution (No. 2 bottle) ...	6 parts
Of the bichromate solution (No. 4 bottle)	4 ,,
Distilled water	10 ,,

In very hot, dry weather a little from No. 3 bottle is added.

Two small vessels, furnished with lips, are provided, as likewise a filter of about sixty grammes capacity, some filter-paper, and a few clean two or three-inch glass plates. The liquid is filtered into one of the vessels, and the filter placed in the other one; it is poured upon the plate in the same way as collodion, the excess being allowed to fall off into the filter. The plate is then placed upon filter-paper upon a sloping iron stand, which is kept warm by means of a spirit or oil flame. The heat must never be allowed to be very great, and while one plate is drying another may be prepared.

The positive *clichés* used for printing should be very soft, transparent, and sharp; they must have been quickly developed, and not in any way intensified.

After exposure, the plate is dusted with the powdered pigment, which is made to spread over the surface by moving the plate to and fro; a brush may be used for the purpose, but only at the commencement and end of development. A well-exposed plate requires ten minutes to become thoroughly developed, and, during the operation, it should be breathed upon from time to time. As many as six plates may be developed at one time.

It is best not to care for indifferent prints; three or four impressions should be taken, and the best of them put into the furnace.

The transfer of the pictures to enamel is best brought about by means of collodion and acidulated water. If the transfer is to be deferred until the next day, the plate should be at once coated with collodion and placed in acidified water, otherwise the complete removal of the bichromate becomes a matter of great difficulty; if placed in pure water, the picture becomes covered with small air-bubbles, subsequently causing the formation of spots.

The image, when removed, is laid with its collodion surface in contact with the enamel, and if an inverted result is desired, it is best to produce the same by means of an inverted positive *cliché*.

If the pictures are to be burnt upon porcelain, the operations are proceeded with in a similar manner, but it is necessary to print more lightly and to use more easily fusible pigments, and, after transfer and before the picture is dry, to pour over the same a saturated solution of borax.

ON THE GUM PROCESS FOR DRY PLATES.

BY MATTHEW WHITING, JUN.*

In the production of dry-plate negatives amateurs often complain of a want of uniformity in the results obtained by them, without sufficiently appreciating the importance of adhering throughout to one invariable system of manipulation, and preparing beforehand the necessary plant for their successful manufacture. In the choice of processes by which uniform results can be secured by the exercise of proper care, I would recommend the adoption of the gum-gallic process as worked out by Mr. Russell Manners Gordon. This has in my hands proved the best on the score of keeping properties, both before and after exposure of the plates. Few can be aware of the immense time and labour bestowed by Mr. Gordon in the perfecting of his beautiful process, and of the great number of experimental plates he has prepared in order to test the results of the gum-gallic method against other processes. Having frequently been requested by my friends to furnish them with details of my mode of working, I gladly avail myself of this opportunity of describing my manipulations, which will be found to agree in most particulars with the practice of Mr. Gordon.

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* *Chem. Techn. Repertorium.*

† *Photographische Archiv.*

* *The Photographic Journal.*

To Clean Dirty Varnished Plates.—Having accumulated some four or five dozen or more, in order to save the trouble of repeated operations, provide a tin fish-kettle with perforated false bottom, costing seven shillings, and, having filled it three-parts full of water, add a quarter of a pound of common washing-soda, and set it on the fire to boil. Just when the water commences to boil, slide in the dirty plates one at a time with the film upwards; after five minutes remove the kettle from the fire, and pour in a sufficient amount of cold water to permit of handling the glasses without discomfort. Now lift up the false bottom and take out the plates, one at a time, and wash them under a tap to remove the soda and old film, which is now quite softened and loose, from the glass, and place the latter in a rack to drain. It is important not to allow them to remain out of the soda liquor so as to become dried in the air before washing the plates with plain water, or the alkali will corrode the surface of the glass, and injure the plates for subsequent use. With a little care this plan of cleaning will prove more simple and expeditious than any other process with which I am acquainted.

Cleaning the Plates for Use.—Before commencing to apply the preliminary coating, I roughen the edges, and clean the plates with tripoli and water mixed with a few drops of ammonia. This is far better than using old collodion for the purpose, and does not so seriously affect the eyes.

Preliminary Coating.—My experience with a substratum of albumen mixed with twelve or fifteen parts of water is somewhat limited; but I am inclined to think that it makes the collodion film more sensitive than the same film would be without its use. In my experiments no fogging has occurred; but sometimes a slight veil has been produced, which may be considered rather an advantage than otherwise, for in printing from under-exposed negatives there is less tendency to hardness, and it is easier to obtain soft and harmonious prints with average exposures.

Collodion.—The quality of collodion which I prefer to use is made with equal parts of ether and alcohol, and contains from five to six grains of pyroxyline of a moderately short and rather thick, not too tough character; say

Iodide of cadmium	3½ grains
Bromide of cadmium	2 „
Iodide of ammonium	1 grain

If kept for a few months after iodizing, the collodion works more uniformly; and I am in the habit of decanting it for use into a collodion-pourer which is capped, but not stoppered, and filling this as required from a reserved clear portion in another bottle previously decanted from the stock. This precaution prevents the occurrence of nibs or specks on the plate; and if any of these should by chance be observed, it is better to reject the plate at once, for it can never produce a perfect negative. Every plate properly coated should be looked upon as capable of giving a good negative; the percentage of losses may, at any rate, be kept down to a very small figure, which will cover mischances of every kind.

The safest test of the collodion being of suitable quality and consistence for the process is, that when the film is wetted with water previously to development, it should soften evenly over without creases, and not show stains afterwards, and intensify regularly up to the required pitch. If there be any doubt respecting the quality of the collodion being proper, it may still be used by moistening the film with a mixture of one part of alcohol and three of water, instead of pure water, before developing, taking care to wash away all greasiness induced by the presence of the alcohol before pouring on the developer.

The Nitrate Bath should contain from thirty-five to forty grains of nitrate of silver per ounce, with just enough acid to show the faintest reaction on blue litmus paper. The bath must have a few grains of iodide of potassium added to it before filtering, in order that the plate when immersed shall not be robbed of its creaminess. Time of immersion five minutes. I use *two* silver baths in the preparation of a series of plates, so as to keep pace with the subsequent washing.

Washing the Plates from the Nitrate Bath.—Arrange a succession of porcelain baths, four containing distilled water, and the others filled with common water. Then, having lifted the sensitized plate from the dipper employed in the silver bath, transfer it to one upon which it goes regularly through the washing baths without the necessity of further transfer; such dippers are easily made from a slip of glass with a cross-piece fastened on with marine glue. The six washing baths can be placed together, side by side, and held together at a proper slope by an elm board one and-a-half inch thick, with the centre cut out sloping to hold them; a wedge at the end they rest on will allow the baths to lean more or less as required. The whole are covered with a paper cap, the more effectually to keep out light and dust. Having coated eight plates in succession, leaving each for about five minutes in the silver, and passing them forward through the water baths one at a time as another is prepared, it will be found that after six washings, with a slight draining after each immersion, the first plate may be taken out and fixed on a pneumatic holder, to be finally washed under a tap, rinsed with distilled water, and drained.

(*To be continued.*)

ON INTENSITY.*

Sometimes there is difficulty in procuring sufficient intensity in the negative; at other times there is a tendency to too much of it. Let us consider these two states of the negative in their order.

I.—There is a Want of Intensity.

It will be well here to take into consideration the various conditions that tend to thinness in the negative; these may be attributed to three principal causes:—

A. *The light and temperature.* B. *The state of the bath.* C. *The nature of the collodion.*

Over the first (*the light*) we have very little control. In very dull days, or in days when the sun is obscured by a yellow fog (as in Indian summer), it is often difficult to obtain sufficient intensity. The only remedy we would suggest would be a wide diaphragm and plenty of exposure. Even the use of an intense collodion does not avail very much, since it generally increases the tendency to hardness. It will be best, when things are in this state, to look well to the diffused light in the operating room. I know of nothing so detrimental to a proper gradation of light and shade in the negative as a flood of diffused light pouring down between the camera and the sitter. Remember, as much as possible, all light should be directed towards the subject. Carefully shield the camera from sunlight, and even from direct top or side-light. If, during the present summer weather, you have a flood of light pouring down from above, as strongly directed towards the camera as from it, you can expect nothing but poor negatives, thin and weak, and inclining to fog; so arrange sloping blinds that the camera will be as much in darkness as possible, and your model well and judiciously lit up.

The *temperature*, too, has a great influence on the intensity. With the thermometer below 50°, you must use artificial means to produce heat. Nor is it of much use to warm the bath alone; you must also make the dark room, solutions, and the glass room, also, all of a comfortable heat. If you are sure that all these conditions have been attended to, you may then proceed to consider the state of our second heading.

B. *The nitrate bath.*—In winter the bath should never fall below forty grains for our collodion. In summer, it may well be allowed to fall to (say) thirty-five grains. Now-a-days, that all collodions contain more or less bromide, a stronger bath is required than formerly, and the more bromide in the collodion the stronger the bath needs to be. In summer, however, the film is more readily sensitized; and as there is a great tendency to streaks and stains in hot weather, it will be well to work with a bath not too strong when the temperature rises high.

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* *Canadian Journal of Photography.*

The amount of acid in the bath has a considerable influence on the intensity. A neutral bath always gives a stronger deposit (other things being equal) than an acid one. A very acid bath never yields an intense negative. If the bath is at fault, or supposed to be, concerning the intensity, I should proceed to test where the fault lay in the following manner:—First, by the hydrometer ascertain the strength. If in winter, I should make up to forty grains, or above; in summer, I should be satisfied with thirty-five, or even less. I should then test for acid by dipping a piece of litmus paper in the bath; if it reddened very quick and very red, I should say it was too acid, and add a few drops of a solution of carbonate of soda, to partially neutralize, and filter. But if the litmus paper reddened but slowly, taking from one-half to one minute to turn the paper of a purple-red colour, I should say it was just right: on the other hand, if it did not redden the paper at all, I should say a drop of nitric acid would do no harm. The above are general directions for testing the state of the bath; of course they pre-suppose the bath otherwise in good condition. They may be summed up in the few following words:—

A bath will yield intense negatives when—

1. It is in proper order, yielding a clear, clean, transparent negative.
2. When the temperature is not below 55°, nor over 70°.
3. When it is at least forty grains strong in cold weather, and thirty to thirty-five in warm weather.
4. When it is not too acid, nor yet too alkaline.

There is still another condition of the bath when it is difficult to obtain proper gradation in the negative, even when, to all appearance, proper precautions have been taken, and that is, when the bath is just on the balance between good and bad; often when a bath is in this condition, the light being good, and the subject good also, you get a splendid negative, but, perhaps, in an hour, you fail to please yourself completely. If you expose short, they come up chalky; if long, the tendency is to fog; if you have it to appearance all right, only weak, and you try to strengthen, you stain or fog, and cannot help it; generally the bath requires complete overhauling, and may be put in the category of a disordered bath, and treated as we have shown in a former article on the subject.

Better make a new bath in a case of this kind, and repair the old one, since nothing satisfactory will be likely to be got from it.

And now C. *As to the influence the collodion exerts on intensity.* Bad collodion is simply *bad*—no remedy for that. But collodion may not be bad that does not yield intense negatives; indeed, it is often the best collodion that is least intense. It may be premised that almost all collodions contain enough iodizer, so we will not advise an addition of that. But new collodion is less intense than old, thin collodion than thick. You may improve it, then, if very new, by adding some old collodion, and if very thin, by adding some more gun-cotton, or mix with a thicker collodion. Sometimes a new collodion, not too thin, may be made to yield quite intense negatives by simply adding a few drops of the tincture of iodine, or even a drop of acid, to the bath, since these additions have a tendency to prevent fog, and allow of a longer exposure and longer intensifying with the developer without veiling. On the same principle, collodion always gives more intensity as it gains age, since it admits full exposures and full development without staining.

We omitted to mention the influence of the developer in regulating the intensity; but we have alluded to this so frequently as to make it almost unnecessary. We will just briefly state a few things, without explanation, in this place.

A strong developer, with little acid, favours thinness.

A strong developer, with much acid, is more favourable to intensity.

A weak developer always favours intensity; the more the acid the more intense the negative.

Moving the developer on the plate tends to intensify.

Keeping the developer perfectly still on the plate tends to fullness of detail and thinness.

The developer may be made to yield more intense negatives by the addition of a little gelatine. It will be well to know how to do this.

To one ounce of acetic acid add half a drachm of Nelson's patent gelatine, and allow to dissolve, shaking frequently for a few hours. You will have at hand a solution of the utmost value for regulating the intensity. Remember that one drop of this solution is equal to ten drops of pure acid, and be guided accordingly. If you wish to prepare a developer that will yield an intense negative—a copy, for example—add to the usual iron solution half the usual quantity of acid, and from two to six drops of the *aceto-gelatine* solution to every ounce of developer; it will very much increase the intensity. You must be guarded, however, in the addition of this, since but little need be added to produce a great effect.

The other part of our subject—too much intensity—we will leave for our next. Again we must explain that our imperfect notes are not intended as guides to the finished photographer, but to his younger brother, the beginner; if they bring to the memory, however, of the more accomplished something he has for the time forgotten, perhaps he will excuse us for introducing them here.

SILVER RESIDUES.*

Great misunderstanding appears to exist on the subject of wastes, both as to the mode of saving them and also as to their value when saved. Nor is it to be wondered at, since very little has been written on the subject, and what has been written has either been too prolix for the general reader, or too general, and not concise and particular enough.

And I., as to their value. Chloride of silver ranks highest in this respect, yielding from fifty to seventy-five per cent. of its weight of pure silver, worth from $1.00 to $1.35 per ounce.

When the chloride is less pure, or not sufficiently washed from the salt, the value is much less, possibly yielding not more than thirty or forty per cent. of silver. Paper clippings, properly reduced to ashes from filters, &c., yield from ten to forty per cent. of pure silver, according to the strength of solutions they are saturated with, and the cleanliness with which they have been saved. A few minutes devoted to the study of this important branch of photography will not be misspent.

I. Then it is of the utmost importance that paper clippings, filters, and all papers impregnated with nitrate or chloride of silver, should be saved in as pure a state as possible—free from pins, pieces of ferrotype plates, dirt, clay, nails, glass, and indeed all foreign substances. Metals deteriorate the value of the reduced silver very much, and, mixed with the ashes, give a false idea of their weight, and the seller has a fictitious idea of their weight and value, consequently is disappointed, not from any fault in the refiner, but from his own carelessness in collecting the residues. There is another thing, too, worthy of notice. All paper not impregnated with silver should be carefully kept out of the stock, since they produce simply paper ashes of no value, are bulky in the refining-pot, require more flux, more fusing, and consequently add greatly to the expense of reduction, and thereby diminish the returns. Nay, they do more. They are positively deleterious, and very much lessen the value of the ashes. I have no hesitation in stating that if a pound of good ashes are mixed with a pound of useless ashes the returns will be reduced one-half. When the ashes contain much useless material, the flux in the melting-pot, instead of being thin and flowing, is stiff and pasty, and it is difficult in the extreme to separate the small granules of silver from the stiff pasty mass. *See, then, that all your paper savings are kept clean, if you wish to get the best value from them.*

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* *Canadian Journal of Photography.*

II. In what state are they best sent to the refiner to get the greatest returns? I answer, carefully reduced to ashes. It takes considerable time and attention to do this, and as it is not much trouble, nor difficult to do, you had best do it at home. A wood stove does it capitally. Carefully clean out the stove, then take a handful of the *dry* silvered paper, and lay it in front on the bottom of the stove; set on fire, and then carefully feed as it burns down. Be cautious so to regulate the draft that none goes up the chimney. When it is all burned, stir well with a piece of iron, to allow the air to get free access to the charred mass, and allow to remain in the stove until quite reduced to ashes. Remember, as I stated before, that charcoal from the paper very much reduces the value of the ashes by adding to the expense of refining. When cold you can weigh them, and they are ready for sending to the refiner. You can send ashes by express, or even mail, for one-tenth the price you could send the paper itself. The paper is very bulky, the ashes not so.

Another thing worth knowing is, that a small quantity is not so valuable in proportion, other things being equal, as a large one: I would never sell less than a half-pound of ashes at one time to gain the highest price.

III. Great care seems to be the rule in all photographic operations (*we ought to be patient men*). In saving your chloride from the nitrate you cannot be too careful. Make a saturated solution of common salt in water (*hot* water is best). This ought to be filtered through a piece of cloth into the old silver solution you wish to reduce; the stronger the silver solution and the stronger the salt solution the easier the operation. When they are weak the chloride is light and very difficult to collect; when they are strong you will be surprised to see how stiff and firm the resulting chloride is, and how easily separated from the liquid around it. Continue to add salt solution till no more chloride is thrown down. To be sure of this (after having thoroughly stirred the mass and allowed to settle), pour off a small quantity of the solution from the top into a clean glass; add to this a few drops of the salt solution. If no precipitate is formed, you may conclude it is all turned into chloride, and proceed to wash away the nitrate of soda from the chloride of silver.* Pour carefully off the clear portion, and pour boiling water on the chloride remaining; stir well, allow to settle, pour off, and repeat two or three times; *it will then be* ready to dry and weigh. Collect carefully, for this pure chloride is valuable.

Things to observe:—Have your nitrate solution as strong as possible; have your salt solution very strong; add enough salt to precipitate all the silver, and wash (for ease) with warm water.

IV. To save the chloride from your print washings, procure (say) a ten or twenty gallon cask, water-tight; take out one end about one-fourth from the bottom—or, better, about the height of a pail—insert a wooden tap, price ten to twelve cents. This is your apparatus. At the tinsmith's procure (say) five pounds of clippings of zinc, fling them into your barrel; it is now ready. When you are about to tone, throw in your first and second washings from your prints, and drain the prints each time to the last drop. Now and then add a handful of salt. Stir the contents of the barrel daily. When nearly full, allow to rest for twenty-four hours, and then, without stirring, but tapping the sides gently to detach any portions of chloride adhering, draw off the liquid down to the tap, and throw away. Proceed to fill up anew. Continue this for six months or a year, and you may then turn out the contents, first bailing carefully off the water, and then collecting the dirty mass of nearly pure silver at the bottom on a strong filter to wash and dry.

Observe.—Never stir the contents of the barrel for at least twenty-four hours previous to drawing off the liquid at the tap. Tap gently on the barrel all round an hour before emptying off, and see that you have always enough salt and zinc to reduce the waste silver from the solution.

5. The developer solutions, drained from the plate, are worth saving. Develop over an earthenware or gutta-percha flat bath; pour the savings each evening into a large bottle, with a little salt to perfect decomposition; when full, proceed, as in the case above, to pour off the useless liquid at top, reserving the precipitate at bottom for further treatment. When you have a quantity of residue, throw on a filter to get rid, by careful washing with hot water, of the salt and iron.

Unwashed developer drainings, simply dried, consist principally of iron, and *are worse than useless* for the purpose of refining. It is simply a waste of time, crucibles, fire, and flux, since it produces no return. Remember, the more and purer the silver solutions to be reduced the less fire, labour, fluxing material, and the fewer crucibles it requires, and, consequently, the less expense is entailed, and the greater the returns.

Pure residues, however small in quantity, will always yield some return. A large quantity of impure residue, though yielding considerable silver, may make no return, since the cost of refining may be so great as to swallow up all the proceeds.

Within the limits of this article it is not possible to include all the means of saving practicable. Let me urge, in conclusion: save what you do save in a cleanly manner, free from adulteration in the smallest bulk, to obtain the best returns.

Residues from toning baths:—

Have two bottles that will contain half a gallon each; into one pour the used toning baths till nearly full; then dissolve two drachms protosulphate iron in an ounce or so of water, and acidulate slightly with muriatic acid. Add this to the bottle of toning solutions; shake well; it will immediately turn nearly black; allow to rest for twenty-four hours; tap the bottle slightly, to precipitate the particles of gold adhering to the side; permit to rest a few hours, to allow all to fall to the bottom; then pour off the clear portion. This bottle may be refilled many times in succession before collecting the wastes. The use of the two bottles is to allow time for precipitation after adding the iron before pouring off; by using them alternately, all the gold may be saved very easily. When you wish to collect the residues, pour all on a filter, wash thoroughly with cold water, then dry, if for sale; if for use, you need not dry, simply redissolve; precipitate with iron once more; wash well; dissolve for the last time in *aqua regia*, as at first; evaporate nearly to dryness two or three times, to get rid of the acid, and it is ready to make the toning bath again.

In these dull times and low prices, every penny saved is surely a penny gained. Save your Wastes.

Correspondence.

FETTERED PROCESSES.

My Dear Sir,—I perfectly agree with you in every particular regarding patents as you set it forth in the leading article of last week's News, provided the patent law of

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* As chloride of silver is slightly soluble in strong solution of chloride of sodium, it is better to add a few drops of hyhrochloric acid for this final test.—Ed. Photo News.

England were as it ought to be, and as it professes to do—viz., to afford protection to the patentee. But, alas! those who have had anything to do with patents know full well that patents mean food for agents, food for lawyers, rich booty to the exchequer; protection, however, is only to be found in a long purse. This seems a sweeping condemnation to the uninitiated; it is truth nevertheless.

It is not true that "no process can become the subject of a patent which is not new." A patent is granted without examination of any kind, except the receipts for fees. You pay a shilling for a bit of paper in which your declaration before a magistrate is set forth that your invention is new, and straightway you go with it and your specification to the office, pay your heavy fees, and you are a patentee. Your neighbour A may have patented precisely the same thing a week before. No matter; they do not tell you; you must find that out yourself; or, worse still, you have found it out, also that A has only provisionally "protected" his invention. Nothing more remains to be done but to pay down cash for the whole instead of by instalments, and then the law recognises you as the only patentee. A is thrown out of court. Fine protection this!

But suppose there is no rival patentee, but simply your valid patent is infringed, where is a public prosecutor to protect your right? If the infringer's purse is longer than yours, he will carry the day. This is the very thing the dear patent lawyers lie in ambush for. The "law," let it be observed, is not administered with justice, but with quibbles; hence its boasted glorious uncertainty. I could enumerate anomalies—aye, atrocities—of the patent law as it is, *ad infinitum.* But suffice it to say, the root of all the evil lies with the profound ignorance of the Patent Commissioners and with the feeing system.

In Prussia you get a patent for nothing if your invention is new and useful; and the Patent Commission there will take care that no rights are infringed. The patent system there may serve as a model to any civilized society; the patent system here is good for nothing, except for the purposes named above.

I am sure I would not say a word against the system, bad as it is, if it only provided the one thing needful, viz., protection; and it does not do that. In short, a patent here is only a good thing for a man with unlimited means, or a "company (limited)."

Can you tell me whether the chromated gelatine admits of camera printing? I can see no ground why it should not. If so, we need only wax a glass plate, coat it with the pigmented compound, expose it behind the negative and lens (glass side turned towards the lens) to steady north light, wash, and transfer on gelatinized paper like a collodion transfer. This would, of course, admit of enlarging and reducing.

If, to your knowledge, the idea is not new, pray do not publish it.—I am, my dear sir, yours very truly, Ennel.

[The method proposed has not received as much attention, we think, as it deserves. As early as the year 1858, Mr. Swan attempted to use such a method without success, but at that time the means of making the carbon tissue extremely sensitive was not so well understood as it is now. Our correspondent is severe on law and lawyers. The law is, of course, but a human agency administered by human agents. Its boast is that it is the "perfection of reason;" its reproach is its uncertainty. Patent law—on which we have some remarks on another page in answer to our correspondent—will, we hope, shortly receive very considerable and valuable revision; but if our information be correct, we can scarcely agree with him in hoping that the Prussian law will become the model. In Prussia subjects of the Prussian Crown only can obtain patents, foreigners being excluded from such rights or privileges. The patentee of a process of manufacture cannot, in Prussia, prohibit the importation of articles made out of Prussia by the process patented in Prussia. Patents are not obtained without fees, although they are light; but the obtainment of a patent in Prussia is, we are informed, "attended with much difficulty, not one application in ten being successful." Such is the dictum of an able authority on the question of patent law. We hope the promised improvements in English patent will be broader and more liberal in their character.—Ed.]

Sir,—I think your argument in your article on "Fettered Processes" would satisfactorily prove that the fetters of the patent law were the least injurious fetters, if the assumptions upon which it is based were satisfactorily made out. But to prove that the photographic public really gains, and does not lose, by photographic patents, it ought to be clearly shown that specifications of patents tell the whole truth as to the inventions, and that new things can be patented. As to the first, I think it is notorious that patentees do not always make a clean breast in their specifications. Is it not true, as alleged in your last, that it has more than once been stated by Mr. Pouncy, that no man but himself knew the secret of his "patented" fatty ink process? And as to the question of novelty, does it not constantly occur that you point out in your own pages the fact that the invention claimed in some new patent was published years previously?

Admitting all the force of your article, however, especially in relation to the fetters of ignorance, which bind many of the carbon processes referred to in your last by "J. C. F.,' I shall be glad if you will publish what is known on unpatented carbon processes, so that some links of the fetters of ignorance may possibly be removed by the aid of others as well as that of A Carbon Experimenter.

[Some remarks on this subject will be found on another page.—Ed.]

IS MR. GORDON'S PROCESS A TANNIN PROCESS?

Sir,—I notice in a contemporary journal a description of an experiment, from which it is deduced that gallic acid may be converted by the action of gum and sugar into tannic acid, and is suggested that in Mr. Gordon's process the sensitive agent may be after all the much-abused tannin produced by the mixture of gum, sugar, and gallic acid Will you state whether you think there is good ground for this conclusion?—Yours truly, Y.

[We do not see any ground for discomfort if the suggestion you mention were really a fact. If the "much-abused tannin" were found to give the best results, there could be no possible reason, that we can conceive, for objecting to its use. It has fallen into bad odour, partly through the uncertainty of the process, and more through the distrust which is commonly felt as to the dicta of its chief advocates. Regarding the reaction in question, we give you the opinion of a gentleman whose chemical knowledge is more sound and extensive than that of most of the writers on photographic subjects—Mr. Spiller, who writes on this subject in the Society's Journal as follows:—"Chemists are, it is true, acquainted with a reaction pointed out by Strecker, in which tannin undergoes transformation into gallic acid and glucose, and they well know that by this or a similar process gallic acid is manufactured from nut-galls; but there is no instance on record of the contrary change having been effected, and we do not consider the simple experiment quoted in the *British Journal* a sufficient justification for entertaining the possibility of this chemical change."—Ed]

CAUTION TO EMPLOYERS.

Dear Sir,—Allow me to caution your contributors, especially in the West of England, against a short, dark young man, who goes about with a plausible tale that he has been out of work a long time, and will take any salary he can get to enable him to live. He states that he was operator for a Mr. Low, of Glasgow, and his reason for leaving was his employer's bankruptcy. As he said he was starving, I gave him some food and engaged him, although I do not want an assistant. I advanced him some money to live on pending the reply from his reference, but he did not turn up at the time appointed, and at the end of the week I received my letter back with "Cannot be found" on it.

I hope the first photographer he applies to, who has read this, will thoroughly sift his story, and expose him as he deserves. Honest poverty would never be allowed to want if it were not for impostors.—I am, dear sir, yours respectfully,

Henry Wilcox.

50, *Park Street, Bristol, July 26th*, 1869.

PHOTOGRAPHS OF WESTWARD HO!

Dear Sir,—Having received the enclosed prospectus,* and thinking that you might consider it would be interesting to some of your readers to give the proposed competition publicity in the News, this being just the season when many of them find time to make their annual photographic campaign, I determined upon making a trip to Bideford Bay and the Westward Ho! that I might learn personally further particulars. I am enabled, through the kindness of J. H., also to enclose the rules, although not yet printed. As many might wish to know somewhat of the style of scenery and means of arriving at the hotel, perhaps a short description of my excursion might be serviceable.

As there is little of interest to the photographer (by the road I travelled) between Ilfracombe and Barnstaple, I shall merely state that one of our Company's well-appointed waggonettes, horsed by a splendid team of four greys, took me to Barnstaple station in about an hour and a-half. Thence I travelled per rail to Instow, as being the shortest route between the above-mentioned town and village, either by rail or road, through the village of Tremington. The views of the town and river are most beautiful. The Kim widens as you approach opposite the quaint village of Appledore, with its old wharves, and quays, and narrow streets paved with cobbles, its primitive inhabitants and antiquated tenements bringing back a remembrance of times gone by, ere railways or electric telegraphs were even dreamed of. The distant Branuton Sands, on which stands the lighthouse; the Bideford Bar, with its rolling waves; and the large shipping lying in the offing, form a magnificent background and middle distance, whilst the passing and repassing of the ferry boats and other craft give life and animation to the scene. To go from Instow direct to Appledore you must cross the river, which is here about a mile wide. It being low water when I arrived, I had to walk some part of the distance over the firm hard sands, and was lifted into and out of the boat on the back of one of the bare-legged amphibious-looking boatmen; but on my return I was able to embark and land from the convenient jetties on each side of the river. From Appledore to Westward Ho! a distance of two miles by way of the shore over the common and along the top of part of the pebble ridge, the scene is ever changing, ever new; the eye completely revels in the picturesque, and the photographer may rest assured that he will find no lack of subject in the neighbourhood, of every variety of scenery, from the shady Devonshire lane to the open seashore, and every comfort can be obtained at the Westward Ho! Hotel.

114, *High Street, Ilfracombe.*

Rules.

Westward Ho! July 17th, 1869.

The competitors must send in, before the 19th of August next, five photographs of Westward Ho! one at least to represent the pebble ridge and rocks.

The photographs must be not less than half-plate size, six and a-half inches.

The copies must be mounted with motto and name enclosed in a sealed envelope, which will not be opened until the award is made.

The mounted copies, with the names of the photographers, will be exhibited in the large room at the Bath House, right and left of the prize photographs in alphabetical order, on the occasion of the visit of the British Association, that the public may inspect them, and order those that please them best.

(By order) F. H.

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Talk in the Studio.

Simplicity of Carbon Printing.—A correspondent, who has recently visited the Autotype Company's Carbon Printing Works in Newcastle, says:—"I was amazed at the great simplicity of the process as now used; no press required, the single and double transfers being accomplished quite easily. I would have no hesitation in working the process at home, if supplied with the tissue. I presume there must have been considerable improvements recently made, which are not yet published, for it is singular that both amateurs and professionals should have held aloof of the Company so long; but no description can convey to a person who has not seen the process worked, any idea of its simplicity—I mean printing, developing, transferring, &c. I did not see the preparation of the tissue, neither did I make any inquiry, as I learned that it is shortly to be in the market at a price little more than albuminized paper."

Canadian Journal of Photography.—This little journal is an interesting illustration of enterprise. No Canadian photographic journal existing, Mr. R. D. Ewing, a skilful photographer and extensive dealer in Toronto, issues a monthly price list of goods manufactured and imported for distribution amongst his customers, and adds to this much valuable photographic information and practical information, some examples of which we extract on another page.

Alleged Ruffianism in a Photographic Studio.—At Worship Street, a few days ago, Thomas Ashdown, photographer, of 205, City Road, attended before Mr. Newton, in answer to a summons which charged him with having on the 5th inst. violently assaulted Mr. Charles Bowley, member of the Royal College of Surgeons, of 147, Kingsland Road. Mr. W. Cooke, solicitor, appeared for the complainant; Mr. Weekes, solicitor, was for the defence. The complainant deposed that on the evening of the 5th inst. he was passing the defendant's studio, when the touter pressed him to have a portrait taken, saying that it would not cost him more than 6d. The complainant, wishing to send his photograph to a daughter at Ramsgate, went in and sat for one. When executed it was placed in a double case, and a woman in attendance said that the cost would be 5s. 6d. The complainant said he did not want a sixpenny portrait, but at the same time he did not mean to pay so much as was asked. The likeness was then placed in a cheaper frame, and 3s. 6d. asked in payment. This the complainant refused, adding that he was willing to give 2s., but no more. He then moved towards the door, intending to leave the place, but was intercepted by the defendant, who struck him a blow with his clenched fist in the eye, causing it to bleed, and making him so ill that he was obliged to sit down. Shortly afterwards he was taken away by a friend. In cross-examination by Mr. Weekes, the complainant said he was sober. Richard Golding, a cab proprietor, stated that he was near the studio at the time in question, and the defendant called him in. He knew the defendant. He was also well acquainted with the complainant, but had no idea when he went into the studio that he was there. He found him sitting in a chair with his eye bleeding. He said that he had been struck. The defendant and the woman attendant seemed surprised that witness knew the complainant. The latter was then taken home; he was quite sober. Sergeant Burrows, of the N division, stated that on the evening in question he found the complainant's face bruised and swollen. Mr. Newton, after hearing the defendant's advocate, said that a most unprovoked assault had been committed. It was not to be permitted that photographers should, on getting persons into their rooms, detain and assault them there. If a case of this description came before him in future he should send it for trial. He ordered the defendant to pay a fine of 40s., and 23s. costs; the alternative was six weeks' imprisonment. The defendant was locked up in default.—*Times.*

The Patent Laws.—A conference of working men was held on Saturday night, at Shaftesbury Hall, Aldersgate Street, to consider the desirability of abolishing the patent laws. Sir Roundell Palmer presided, and, in his address, which provoked frequent expressions of dissent, sought to show that neither working men nor the country generally derived benefit from the patent laws. Mr. Macfie supported the views advocated by Sir R. Palmer. On the other hand, it was contended by Mr. Paterson, Mr. Savage, and several working men in the body of the meeting, that the patent laws were the best practical means of encouraging and remunerating inventors yet devised; that without encouragement and remuneration inventors would never incur the cost and labour of devising new inventions; that the public introduction of new inventions could only be accomplished in a large majority of cases at great expense; and that manufacturers and capitalists would not embark money in publicly introducing new inventions, unless some inducement, such as the patent laws afforded, were accorded to them. It was ultimately resolved—First, that this meeting, having heard the statements for and against protection for inventions by the existing patent laws, is of opinion that protection is absolutely necessary as a means by which inventors may be secured a sure and legitimate right in their inventions; secondly, that an amended patent law, which would give efficient protection to inventors at a low cost, would be of the greatest value to this country, and enable it to maintain its supremacy in the mechanical and chemical arts.

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* PHOTOGRAPHY.

Prize Five Pounds.

For the encouragement of art and the convenience of members of the British Association visiting Westward Ho! the above prize will be offered for the Best FIVE PHOTOGRAPHS of WESTWARD HO! Open to Professionals and Amateurs.

Copies of Negatives must be sent for Adjudication before the 19th of August, with Motto and the Name of the Competitor in a sealed envelope.

For Rules apply to F. H., Royal Hotel, Westward Ho! Bideford Bay.

☞ The copies of negatives sent by competitors will be arranged in alphabetical order on each side of those for which the prize has been awarded, for the inspection of members of the British Association.

Suicide.—On Thursday. Dr. Lankester held an inquest at the Castle Tavern, Holloway Road, respecting the death of William Watson, aged fifty. Charles Watson identified the body as that of his father. The family had removed, but his father remained to let the house and to dispose of a photographic apparatus. On the Monday night his father asked him to look if there were any spirits in the cupboard, and he then saw a bottle containing a large quantity of the solution of cyanide of potassium, which he thought had been taken into the kitchen to be sold with the photographic apparatus. Dr. F. J. Buckle deposed to seeing the deceased at half-past ten on Tuesday night. The room smelt strongly of prussic acid. He took a bottle out of the cupboard (produced), containing a solution of cyanide of potassium. The upper lip was slightly charred through connection with some corrosive and irritating fluid. The brain and every part of the body smelt so strongly of prussic acid that he had two or three times to leave the room for fresh air. The mucous membrane of the stomach was of a chocolate colour. and he took away from the stomach a quarter of a pint of black fluid, which was found by tests to contain prussic acid. The deceased had taken a great quantity of cyanide of potassium, which was converted through the action of the stomach into prussic acid. The cause of death was poisoning by cyanide of potassium. The jury agreed with the coroner, and returned a verdict of "Suicide while of unsound mind."

To Correspondents.

Anxious.—The solution from your broken glass bath became contaminated, we presume, from contact with the mahogany case. The use of a little permanganate of potash solution will prove the most ready and efficient remedy, and will probably restore the bath to a working condition without much waste. Neutralizing and prolonged sunning would also probably prove a remedy. 2. The contact of the vulcanized india-rubber band you enclose would readily account for the black spots on unvarnished negatives, the loose particles of sulphur forming spots of sulphide of silver; cyanide of potassium may possibly remove them, if used carefully, so as not to injure the negatives. 3. The quantity of water necessary to wash a negative properly after fixing with cyanide cannot be with certainty stated, as so much depends on the mode of washing. Soaking for a time in half a pint of water would be more effective than hasty flushing with a quart; possibly a pint of water slowly and carefully used might be sufficient for a stereo plate in the field, but we should prefer more. 4. The turbidity you mention need not be filtered from the cyanide solution. 5. The action of the golden syrup solution is to stop development, and remove sensitiveness; but it is better not to expose the plate to a strong light. The golden syrup may be measured. The exact proportions are not important. 6. We believe that ebonite does not injure the silver solution by prolonged contact. 7. If the colour of cloth has been removed by cyanide in removing a silver stain, we do not know of a method of restoring the colour of the cloth, as it is quite impossible to say with what the cloth has been dyed.

J. C. S.—You would have materially facilitated our opportunity of aiding you if you had sent an untoned print and a finished picture; the latter to enable us to form an opinion of the tone of which you complain, and the former that we might have watched in toning the tardiness and imperfect toning. As you state that prints on other samples of paper tone well in the same toning bath, it seems very probable indeed that the paper is in fault. It is possible, however, that the use of a stronger silver bath may help you. If the paper happen to be more lightly salted than other samples you employ, it will contain, after exciting, less free nitrate; and as the presence of a little free nitrate is a material aid to toning, its possible absence here may be the cause of the slow and imperfect toning you describe. If the use of a stronger bath does not help you, send us one or two untoned prints for examination and experiment.

Ed. Fisher.—A somewhat dark warm grey is a good colour for the interior of a studio. 2. The calico you enclose will answer for blinds. 3. It is probable that this will serve without other blinds of darker colour; but this you will best ascertain by experiment in your own studio. 4. The collodion you are using is very good, but for architecture in direct sunlight it will be improved by the addition of from half a grain to a grain of bromide of cadmium to each ounce.

W. S. (Dartmouth).—We are uncertain as to whether the prints you name are copyright or not; but we believe the two—"We praise thee, O Lord," and "Lord, have mercy upon us,"—are copyright. So far as we know, De la Roche's "Head of Christ" is not.

J. J. R.—There has been much general progress since the period you name, but it is difficult to enter into detail in regard to specific progress. The general modes of working remain much the same. In the wet process, bromo-iodized collodion, silver bath with trace of nitric acid, iron developer and intensifier, are now universally used. There have been improvements in lenses, and in printing processes; especially modifications and improvements in modes of dealing with disordered baths, in modes of intensifying in dry processes, &c., have also been made. The gum process, as modified by Mr. Gordon, now in use, is somewhat different to that you describe, and will give, we think, more sensitive plates. The object of putting silver into collodion, to which you refer, or making collodio-chloride of silver, is for printing purposes. It is a process we devised in 1864. You will find it described in our Year-Book. Mr. Hughes's shilling Manual of Photography is as good a text-book as you can procure.

X. Y. Z.—Your portrait lens of long focus will answer your purpose best for large groups, and, by a little skill in the arrangement of the figures, you will not find it difficult to get all in focus. 2. Where it is necessary to coax out an image with very short exposure, a fifty-grain iron solution with twenty minims of acetic acid may be used; but care is necessary to avoid fogging. A piece of wood held in the hand may be made a very good substitute for an instantaneous shutter.

R. F.—Bromides were used in collodion almost as soon as the collodion process was discovered. It is quite impossible to say by whom bromides were first used in collodion: the step was so natural, following the analogy of the Daguerreotype process, that it would scarcely fail to have been used by many persons. We produced negatives with bromo-iodized collodion and iron development at least fifteen years ago. The person you name was, until within the last few years, a strong opponent of the use of bromides in negative collodion. We have never made any claim as to the introduction; we merely aided by constant advocacy to popularize the use. Ten years ago we believed that we were the first to publicly notice the singular effect of a bromide in collodion in aiding the production of clean positives and negatives, but we ascertained that Mr. Hughes had mentioned the same fact a short time previous in a letter to Mr. Hardwich, published in the Society's Journal. We have not tried the process to which you refer, but shall probably do so shortly. Recollecting the past, we accept the description of its wonders *cum grano salis;* but we do not condemn untried. Let us know the result of your experiments.

John Otto.—Manufacturers of photographic apparatus in this country make changing boxes for dry plates. An arrangement exists for connecting the end of camera-back to the requisite groove in the box, and by the aid of a spring changing the plate from one to the other. As it is necessarily a thing which is made by a manufacturer, and not by an amateur for himself, no description of a changing box has appeared in our pages. Should you not be able to procure one from a Danish manufacturer, the best plan will be to obtain one in London through some commercial house. We shall have pleasure in seeing some examples of Danish photography. The stamps were received, and the Year-Books have been posted. As you will see, there are still one shilling and threepence due for postage.

Stupid.—The tendency to red fog in the shadows arising whilst intensifying with pyro and silver is a common trouble in hot weather. It is dependent upon several causes; but the best remedy is the use of a wash of an aqueous solution of iodine between the application of the developer and intensifier. Also use as little silver in the pyro as possible. A fresh ten-grain solution of silver with plenty of citric acid is best. The use of iron and citric acid and silver is very common now for intensifying.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 570.—August 6, 1869.

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ENLARGEMENTS IN AN ORDINARY CAMERA ON COLLODION.

The mode of producing enlargements on collodion in the camera by the ordinary wet process has been so often described that little which is new remains to be said on the subject. That the method gives promise of the highest permanency, and that its results are exceedingly perfect, are facts now largely recognized. Notwithstanding this, however, and that it has been so often described, and notwithstanding the beauty of the results when well managed, the process is singularly little practised: and we have reason to believe that many who attempt do not succeed to their perfect satisfaction. Possibly this is partly due to the fact that, as there are several modes of transferring, the experimentalist tries one after another, without steadily sticking to any one method until he has mastered it. As we recently had an opportunity of seeing the manipulations as conducted in a large establishment where the process was constantly and successfully carried on we will briefly describe the precise operations which came under our notice.

We should premise that the negatives employed were those usually produced in the establishment for albuminized paper printing. It is true that the custom of the establishment was to produce delicate, soft negatives, free from chalkiness or hardness, but no especial treatment was adopted with those from which enlargements were to be printed. Nothing could exceed the beauty of the enlargements, which, in all cases, equalled, and in many seemed to surpass, in perfection and distribution of definition, images produced direct with large lenses. As a rule, the amount of amplification seemed to be from four to six diameters, a head from a carte or cabinet picture being enlarged to one on a sixteen by twelve plate, generally a vignetted head of four or five inches long.

The ordinary method of producing enlarged transparencies was employed. A long sliding-bodied camera, large enough to take the size required, with a sliding partition in the middle, carrying a number one triple lens, and a frame at the other end, with apertures suited to different negatives. The camera was tilted to an angle of about forty-five degrees, so that the negative faced the northern sky. For vignetting, a card with an oval aperture was placed outside the negative, a few inches from it. This gave an abrupt line when the image was focussed, but, on interposing a piece of very fine ground glass, this softened the edge of the aperture effectually, and gave a good vignette effect, without, as we were assured, increasing the exposure in any inconvenient degree. As four or five cameras were generally kept going, the work was made to fit conveniently without involving much waiting in consequence of protracted exposure.

All the conditions of working were similar to those for good negative work. A good bromo-iodized collodion, tough, and of good body, a thirty-five-grain nitrate bath in good condition, slightly acid with nitric acid, a fifteen-grain iron developer with acetic acid, and fixing in hyposulphite of soda. The time of exposure and of development can only, of course, be learnt by experience.

The toning was effected with a strong solution—probably about a twenty-grain solution—of bichloride of mercury, followed by hyposulphite of soda. The mercury solution was applied until the image was of a grey tint throughout; it was then washed, and a weak solution of hyposulphite of soda was poured over it, which rapidly turned the image black. It was watched until the action was seen to have passed right through the image, which was then well washed. It is probable that the black sulphide of mercury will be quite permanent, but we prefer the gold toning and pyro development which we described some weeks since. In either case, however, a good black tone may be obtained, the permanency of which we have no reason to doubt. Other modes of toning, giving slightly different tints, may be employed; but it is not necessary to enter into detail in regard to them now.

After the plate has received a very thorough washing, a piece of prepared paper is applied. This prepared paper simply consists of a piece of fine white paper—plain Saxe or Rive would answer well—which has received a very slight coating of gelatine solution. The exact strength of gelatine solution we did not learn, as somewhat of a rule-of-thumb method, based upon experience rather than formulæ, seemed to be adopted. It should not, however, exceed about ten grains of gelatine to an ounce of water, and should, of course, be applied warm with a sponge or a brush. It is important, for various reasons, to avoid excess of gelatine; the paper should scarcely show that it had received any coating at all, a glazed surface indicating excess. The plate being placed on a levelling-stand and covered with water, the gelatinized paper, prepared side downwards, is placed on the film. The wave of water between, on draining out, prevents the formation of air-bubbles, and a piece of blotting-paper being placed over the paper, it is well rubbed down with a napkin, and the plate is put aside to dry.

There are three modes of removing the print from the glass. We should have observed, that good plate glass, scrupulously cleaned, but without any coating of wax or similar body, is used for producing the picture on. The glasses are used over and over, but each time are immersed for a time in the bath of bichromate and sulphuric acid. It is at the stage of removing the print from the glass that any imperfection in cleaning the glass becomes apparent, as on a dirty glass the film may adhere in parts; but on a clean glass, if a suitable sample of collodion be used, and the manipulation properly managed, sticking is unknown. The usual method of stripping the glass is the least trouble. The film and paper having dried, the plate is immersed in a dish of water for a few minutes, or held under a stream of water from the tap. A penknife is then placed under one corner, and the paper, with the print adhering, is then lifted away and hung up to dry. Another plan consists in moving the paper and film without wetting it again; but unless a very tough collodion be employed, this method is not quite so safe as the preceding one. It is adopted if the print be required to possess a fine glazed surface, like that of the glass upon which it was taken; but, as a rule, we prefer the less glazed surface which is obtained when the paper is moistened before removing it, with the film, from the glass. It is also possible to remove the paper and film, without re-moistening, by lifting it away before it is quite dry, in which case also a glazed surface is secured, only slightly less brilliant to that obtained by stripping dry. This highly glazed surface is, however, not desirable for large pictures, and is always, to some extent, lost in mounting, especially if any adhesive material but glue is employed.

One important caution is to be observed in order to make sure of the film leaving the glass easily and perfectly. When the gelatinized paper has been laid down, *the plate must be left to dry spontaneously*. If it be dried before a fire, it often becomes very difficult to strip the film, portions of which will sometimes adhere and tear in lifting, and often in the most important portions of the picture.

This mode of enlargement is most commonly applied to portraiture, but there can be no reason why it should not be used for landscape work. One admirable purpose to which we saw it applied was exceedingly successful. An architect's drawing of a church was required the size of the original, about twenty by sixteen inches. A small perfect negative was obtained without any difficulty, and from this at once a few enlarged transfers were obtained of a most perfect kind. These were certainly at least as perfect, and we were assured were produced with very much less trouble, than would have been involved in producing a good large negative sufficiently dense to print perfectly clean black-and-white impressions, and then proceed to print impressions from such a negative. Altogether we are satisfied that the mode of working is deserving of much more attention than it has hitherto obtained.

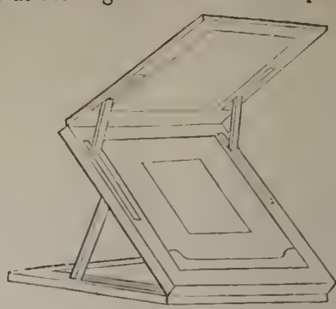
VISITS TO NOTEWORTHY STUDIOS.

M. Reutlinger's Studio in Paris.—More Details.

We further supplement our own description of the studio of M. Reutlinger by some account of the working details of the establishment from his own pen, forwarded to our esteemed confrère, Mr. Wilson, of the *Philadelphia Photographer*, who obligingly favours us with early proof. M. Reutlinger proceeds:—

"After leaving the dark room we enter an adjoining room in which the negatives are retouched; and where, in fact, all the retouching is done. This room faces, likewise, north. The artists who attend to the retouching of my negatives are provided with a kind of desk. The retouching is generally done with a lead-pencil, but sometimes a brush and india-ink are employed. These desks are of the same kind as those employed by painters, and can be raised or lowered according to fancy. The upper part is cut out, to facilitate the placing of the negatives, and below is a mirror, which reflects the light through the picture. I add, however, a drawing, for the better understanding of the construction.

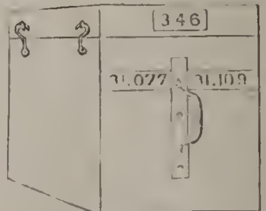
"The printing department is one storey higher, and cannot claim much merit, as I lack the space to construct a proper apartment for it. The fact is, I have to do my printing on the roof of the house, so you can easily imagine that I have, at such a height (six and a-half stories from the ground), to contend with many difficulties. As I have not the right to make permanent fixings, I can simply place boards in such a position as to form a platform on the slanting roof, and at the edge a wire screen is provided, which will catch any frames that should happen to fall or slide down the inclined sides of the roof.



"As regards the printing itself, it is divided into three parts. As the paper cannot be placed in the frames on the roof itself, there is, for this purpose, a room provided which is about fifteen feet distant from the printing place. One party places the paper into the frames, another carries the frames from the room to the roof and back again, and a third one superintends the printing proper. While writing on this subject I must not forget to mention how I have arranged that my printers always know how many prints they have to make of a negative, a work that is not always properly controlled in large establishments. The printer receives from every negative the first rough copy; these he sews together in the shape of a small pamphlet, and on the back of the picture is made a memorandum by the person who examines the proofs, and who notes down how many good prints have been taken from it. When the whole number which has been ordered is filled, the picture is torn out, and the negative returned to the store-room. Each negative has a strip of paper attached to it, on which the number of prints to be taken, as well as the number of the negative, is written down.

"I consider my way of storing negatives preferable to the one employed by most photographers. Generally they are placed in large closets provided with racks in which the negatives are placed. This takes, in the first place, a great deal of room; and, in the second place, is rather expensive.

"I had boxes made of the form of the enclosed drawing—



thirty-one inches long, twenty-one inches wide, and twenty-six inches high—for carte-de-visite negatives, and each box will hold fifty negatives. The interior is provided with twenty-five partitions, and each partition will hold two negatives placed back to back. These boxes are placed on shelves. They are provided with iron handles, to facilitate lifting, and on the outside is a paper containing the register numbers of the contents, so that any desired negative can be found in a few moments.

"The following are the formulæ which I use in my daily practice:—

Collodion.

Ether	600	parts
Alcohol	400	„
Cotton	10 to 12	„
Iodide of ammonium	6	„
„ cadmium...	4	„
Bromide of ammonium	1	part
And a little pure sodium ...		

Silver Bath.

Nitrate of silver	8 parts
Distilled water	100 „

Silver Bath for Intensifying.

Distilled water	1000 parts
Nitrate of silver	40 „

Developer.

Sulphate of iron and ammonia ...	50 parts
Common water	1000 „
Acetic acid...	50 „
Alcohol at 36 per cent.	30 „

For the printing process I use—

Silver Bath.

Nitrate of silver	15 parts
Distilled water	100 „

Toning Bath.

Water	1000 parts
Acetate of soda	30 „
Chloride of gold	1 part

Fixing Bath.

Water	1000 parts
Hyposulphite of soda	200 „

INDUSTRIAL ART AND SCIENTIFIC INVENTIONS.

[We condense the following announcement of an intended International Exhibition to be held at South Kensington in 1871. We omit such portions as possess least interest to our readers.]

A.

Her Majesty's Commissioners for the Exhibition of 1851 announce that the first of a series of Annual International Exhibitions of selected Works of Fine and Industrial Art will be opened in London, at South Kensington, on Monday, the 1st of May, 1871, and be closed on Saturday, the 30th of September, 1871.

B.

The Exhibitions will be held in permanent buildings, about to be erected, adjoining the arcades of the Royal Horticultural Gardens.

C.

The productions of all nations will be admitted, subject to obtaining the certificate of competent judges that they are of sufficient excellence to be worthy of exhibition.

D.

The objects in the first Exhibition will consist of the following classes, for each of which will be appointed a reporter and a separate committee :—

I. Fine arts.

1. Painting of all kinds, in oil, water-colours, enamel, porcelain, &c.
2. Sculpture in marble, wood, stone, terra-cotta, metal, ivory, and other materials.
3. Engravings, lithography, PHOTOGRAPHY, &c.
4. Architectural designs and models.
5. Tapestries, embroideries, lace, &c., shown for their fine art, and not as manufactures.
6. Designs for all kinds of decorative manufactures.
7. Copies of ancient pictures, enamels, reproductions in plaster, electrotypes of fine ancient works of art, &c.

II. Scientific Inventions and New Discoveries of all kinds.
III. Manufactures.
IV. Horticulture.

F.

The arrangement of the objects will be according to classes, and not nationalities, as in former International Exhibitions.

I.

Her Majesty's Commissioners will find large glass cases, stands, and fittings, free of cost to the exhibitors, and, except in the case of machinery, carry out the arrangement of the objects by their own officers.

K.

Prices may be attached to the objects, and exhibitors will be encouraged to state their prices. Agents will be appointed to attend to the interests of exhibitors.

L.

Every object must be accompanied with a descriptive label, stating the special reason, whether of excellence, novelty, or cheapness, &c., why it is offered for exhibition.

M.

Due notice will be given of the days for receiving each class of objects; and, to enable the arrangements to be carried into effect, strict punctuality will be required from all exhibitioners, both foreign and British. Objects delivered after the days appointed for their reception cannot be received.

N.

Reports of each class of objects will be prepared immediately after the opening, and will be published before the 1st of June, 1871.

P.

There will be no prizes, but a certificate of having obtained the distinction of admission to the Exhibition will be given to each exhibitor.

Q.

A catalogue will be published in the English language, but every foreign country will be free to publish a catalogue in its own language if it think fit.

HENRY Y. D. SCOTT.
Lieutenant-Colonel, R.E., Secretary.

Office of Her Majesty's Commissioners for the Exhibition of 1851,
5, *Upper Kensington Gore, London, W., July* 23.

TRANSFERRING COLLODION PRINTS.

BY W. DE W. ABNEY, R.E.

My attention having lately been drawn to the transferring of films, the following method and application of transferring the film from Obernetter's paper may, perhaps, be of use to others than myself.

Print on Obernetter paper, and tone as usual. To the print so obtained, and to the smooth surface of thin cartridge paper, apply a solution of india-rubber. Rub the back of the cartridge-paper with a straight-edge (a paper-knife answers) on a smooth, hard surface. Place under a weight, and let dry. When dry, moisten the back of the Obernetter paper with hot water, about 180° F. The film will now leave the paper on which it was originally fastened, simply by separating the latter from the former, and peeling it off. The film having been supported on what I suppose is porcelain paper, a milky glutinous substance adheres to the film; this can be carefully sponged off, as also any small pieces of paper which may have adhered. The film again has to be transferred, to prevent inversion; this is done by coating the substance on which it is desired to mount the film with a solution of gelatine moderately thin, and also the film itself. Rub as before, and dry under a weight. Separate the cartridge-paper from the film by moistening the back with benzole.

Various effects in landscape (or portrait) photographs can be produced by this means. I have lately been mounting my films on tinted drawing-papers. I have traced the outlines of a landscape photograph on tracing-paper, and retraced them on the drawing-paper, marking accurately the edges of the print; I have then looked to see what was necessary to add in light or shade to give an artistic effect to it. I have added these lights with white paint on the drawing-paper, giving "*forte* points," and clouds, where required, with sepia, and neutral tint, and white, to gain balance. The pencil marks, except those marking the boundary of the drawing, I have obliterated, and then *re*-transferred the film from the Obernetter paper on to the worked-up drawing-paper. Photographs in which high lights are in the wrong place can be thus corrected (on a grey paper they appearing grey), and the forte points given where an artist's eye tells they are required. I would remark that in these cases I only gelatinize the *surface of the film, and not the drawing-paper*, but with rather a stronger gelatine solution.

The following wrinkle for which I am indebted to Mr. Brookes, of Penzance (although second-hand), may be of use to amateurs who keep photographic scrap-books, and who find difficulty in mounting prints without cockling the paper. Mount the prints on cartridge-paper with starch, damping both the print and paper first. Rub with a straightedge, as described above, to get rid of superfluous starch, protecting the surface of the print with smooth writing-paper. Dry under a weight. Cut out the print, and mount the print in the scrap-book by its corners with fine glue. There will be no cockling, and the prints may be removed at pleasure by simply inserting a pen-knife under them.

Aldershot, August 3rd, 1869.

BUSINESS ASPECTS OF PHOTOGRAPHY.

BY JAMES MARTIN.

I SEND you, as I promised, a few observations made during my absence from home. I found, as I expected, that many changes have taken place amongst my photographic friends, and was sorry to see so many for the worse. As regards the business prospects of photography, the decrease in demand seems universal, and many talented men have either left the profession, or are thinking of doing so, whilst others are adding various branches of trade for the purpose of increasing a too scanty income. All this is no more than might have been expected: the novelty and beauty of photographic productions caused for a time quite a mania for their possession, which has now, in a measure, ceased. A knowledge of the art (to a certain extent) being—may I say?—too easily acquired, and the profits at that time being liberal, caused hundreds of persons to leave their legitimate callings with the hope of acquiring easily a rapid fortune. Some few have, no doubt, realized large sums, and, if they have been provident, may now have a comfortable balance at their bankers; but I fear many are at the present time in a worse position than they would have been had they never forsaken the trade they were bred to, and for which their education and habits best fitted them. In charity, we must regret their present distress, but, as the unlimited competition of this class has led to the present low scale of remuneration for professional labour, stern justice can afford them little pity. There is no doubt that there will always be a certain amount of demand for photographic productions in portraiture, landscape, copying, and various other branches of art and commerce, and new fields of usefulness will open as improvements take place; but this will be a work of time; therefore, I would caution any one from entering the profession at present. To the amateur it can never cease to be a delightful and interesting study, and a great assistance to the artist in his pursuit of character and truth of delineation.

The principal questions at issue, I found, were the patent laws, personal luggage by rail, and copyright.

As regards the first-mentioned, there is a great variety of opinion. Some are for doing away with the granting of patents *in toto*, as being hindrances to progress, and instances are given very much to the purpose; but the majority consider that the interests of the original and ingenious mind should be protected, and, in some measure, be secured, but that, at the same time, care should be taken against granting patents that are frivolous and vexatious. I fear we have too many such in connection with photography.

As to what railway officials choose to consider personal luggage is, at the present time, a serious question to photographic tourists, and calls for some prompt and equitable arrangement. In too many cases these great monopolists have abused the concessions granted them, and ruthlessly triumphed over the sufferers. I should hardly think that any magistrate would decide that a workman travelling per rail should not be allowed to carry with him his tools, or a traveller his samples, without extra charge, so long as there was nothing amongst them tending to the discomfort or danger of his fellow-travellers, and were within the weight allowed for the class he travelled by. Photographic apparatus may most assuredly be considered as the tools of the photographer, and should be rated accordingly. Perhaps the plan might be adopted of packing the camera and chemicals in a commonly shaped, lightly made trunk. Surely railway tyranny would never dare institute a revenue staff to demand our keys to search for contraband articles.

The law of copyright is a matter of deep consideration to the profession, as, in its present state, piracy is openly practised. I think some scheme might be worked out in the form of a licence, to the mutual benefit of the Government and the photographer, so that all works issued by a firm, during its holding such, should be considered copyright, and protected by the law accordingly.

It is also questioned as to whom the negative ought to belong—the customer or the photographer. I should consider this must depend upon the form in which the order is given and taken. Should a number of prints only be named, they could hardly be considered to include the negative unless it was specially named in the order. Care should be taken, in receiving an order, that no mistake should arise.

I may say that I observed few novelties. The principal demand is still for cartes-de visite. Enlargements appear to be working their way upwards in public estimation, and will, no doubt, be in large demand. The general improvement in all departments of the art seem very great, and even the poorest establishments have ceased to show the soot-and-whitewash caricatures of former days.

114, *High Street, Ilfracombe.*

A QUICK PRESERVATIVE PROCESS.

BY J. J. BARDWELL.*

I RECENTLY received a letter from a gentleman engaged in aerial photography making inquiries of me (by introduction from yourself) of the best method of taking instantaneous negatives on dry plates. It appears that he has been using the wet process, but his work requiring some little to elapse between the sensitizing of the plates and the exposure, found in consequence considerable trouble in keeping them in a suitable condition to make a clean and perfect negative. Presuming there might be a dry process that would answer his expectations, he wrote to me, asking for my experience and advice in the matter. I therefore answer his inquiry with a formula that I have no doubt will satisfy his desire, and, at the same time, make the journal a means of communicating the same to others who may wish to work a very satisfactory quick process. The formula is based on the old honey process of Maxwell Lyte, a man to whom many of the old photographers are under many obligations. He gave to the craft the metagelatine process; the phosphate of soda toning bath; was one of the first to recommend the use of bromides in collodion; and the first who recommended and brought into use bromide of ammonium in collodion.

In using the formula below, it is taken for granted that the nitrate bath has been prepared with care, and that all the chemicals, especially the honey, are pure. The honey is, however, better old than new. A pure sample having formed crystals of grape sugar will give the best results. The development is by the pyrogallic acid method, the solution to contain the least quantity of restraining agent possible to work a clean negative with.

Honey	4 ounces
Water	6 ,,
Nitrate of silver	100 grains
Alcohol	4 drachms

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* *Philadelphia Photographer.*

This solution, after standing some time, is to be filtered bright, and, on after-sensitizing the plate, it should drain for about one minute, and then the honey solution should be flowed over it twice or three times, letting it drain into a separate vessel to be returned into the stock bottle after the day's work is done, to be used again at your next opportunity, first filtering as before. The plates will keep for an hour or two in warm weather, and are the most sensitive of any that I have had experience with, and are, in fact, quicker than the wet process. They require great care in developing, but, to one that is used to the dry plate practice, will give no trouble. It is best to give the plate a substratum of a very thin solution of albumen, as the film is very apt to slip. I do not recommend a powdery collodion for this process, nor, in fact, for any dry plate, but I do find that collodion that works best wet is also best for the dry. The substratum has altogether obviated the necessity of a powdery film.

◆

ON THE GUM PROCESS FOR DRY PLATES.

BY MATTHEW WHITING, JUN.*

The Preservative.—Gallic acid solution made by dissolving three grains to the ounce of distilled water by the aid of heat and filtering. This is poured on and allowed to run well over the plate and up to each corner for a few seconds, then drained off and thrown away.

The gum preservative (gum arabic twenty grains, sugar-candy five grains, and water one ounce, filtered) is poured on in the same way, and the plates placed on a rack to drain. Before pouring on the gum solution, if it is put into a glass measure so as to quite fill the latter, all the air-bubbles which rise to the surface can be floated off, and no blisters will form on the plate afterwards. By the time all the eight plates are on the rack there will not be much moisture to drive off; and they should then be placed on a stove, resting with one end on blotting-paper, to be finished.

When the plates are properly dried on the stove, edge the collodion film with a rather thick solution of shellac and alcohol, using a brush as mentioned some years since by Major Russell.

Should the plates be required to be kept for any length of time, they are best stored in a white-pine box well coated both inside and out with varnish made of shellac and spirit. This is seldom done by the box-makers.

Pigment applied to the Backs.—Burnt sienna ground in water, mixed with an equal bulk of British gum and a few drops of glycerine, painted over with a wide camel's-hair brush, and again dried. Each make of plates should have a small piece of paper with a reference number stuck on the back of every plate. The carbon tissue prepared by the Autotype Company, being black on the gelatine side, answers well. Should any plate after exposure turn out faulty, the possibility of being able to refer back to the collodion used will often prove very useful.

Exposure—Although a good dry-plate negative can often be produced in a few seconds, much time is saved, when developing, by giving a full exposure, whereby the printing qualities and softness are much improved. More bromide added to the collodion imparts extra sensitiveness where short exposures are imperative; and the plate should then be left for a longer time immersed in the silver bath When using a six-inch stereo lens I usually give from one to two minutes. Dallmeyer's "wide-angle," and also his "rapid rectilinear" lenses are the most suitable for short exposures: they give great brilliancy without requiring the use of too small a stop. The most useful lens of all, I find, is the wide-angle No. 3, which covers a ten by eight inch plate, and gives nearly straight lines on a seven and a quarter by four and a quarter plate.

Development.—Wipe the colour carefully from the back of the negative with a piece of sponge, then soak the film with water (or alcohol and water) until it is thoroughly moistened, and apply the developer, which, in the event of over-exposure being suspected, should be previously diluted with an equal bulk of water. Allow the action to proceed until all the details are well brought out, when the plate is washed with water and intensified with a two-grain solution of pyrogallic acid, with a very little silver added. The iron developer is used in conjunction with a few drops of nitrate of silver; say—

Protosulphate of iron	...	20 to 25 grains
Glacial acetic acid ...	...	... 20 min.
Gelatine dissolved in acetic acid	... ...	10 or 20 ,,
Water	... ...	... 1 ounce

Fix with hyposulphite of soda, and wash thoroughly. If any liquid should happen to have worked its way underneath the film, a pinhole must be made at one corner to let it escape.

Subsequent Intensification may nearly always be resorted to with advantage for the purpose of improving the printing qualities of the negative. This operation is performed as usual with pyro and silver, the latter added only in very small quantities.

Varnishing the Plates.—A convenient method of drying the plates before varnishing is the base-board with central upright, made after Major Russell's plan. Upon this the negatives can be rested before a fire so as to dry them slowly and thoroughly. If the least trace of moisture be left in the film at the time of varnishing, there will be no security for the proper adhesion of the picture to the glass, and the film often cracks in consequence. After the plate is well dried, and still slightly warm, pour on the varnish, and let it not only spread all over, but return a second time over the plate before pouring it off at one corner; then hold before the fire again until the varnish has set firm. A good varnish should leave a brilliant surface when dry, and hardly show upon which side of the plate it has been applied. The more a negative has been developed the longer will be the time required for the varnish to soak through to the glass. A dull surface will indicate too short a treatment, and such a varnished film cannot be so well depended on.

General Remarks.—A substratum of albumen carefully applied after Mr. Fry's method seems to give the best results, and ensures a thorough adhesion of the film to the glass. Take one ounce of albumen to twelve or fifteen of water, beat them well together, and allow to settle. When filtered, add enough liquor ammoniæ to impart a distinct odour. Put the clean plate upon a levelling-stand, and pour a small pool of the mixture on to the centre; then, with a piece of card, guide the albumen to within one-sixteenth inch of the edge of the plate, tilt it off at one corner, and put in a rack to drain and dry. When dry, the surface is beautifully smooth and bright, and, inasmuch as every part of the plate which has been touched with albumen will afterwards be coated with collodion, there need be no fear of injuring the bath.

I have endeavoured to be precise in the foregoing instructions, with the view of aiding amateurs who may be inclined to employ the gum process, well knowing how essential it is to success that small matters of detail be properly attended to and appreciated before commencing operations by this or other plans of dry-plate photography.

◆

PLATE SUPPORT FOR DEVELOPMENT.

BY L. DE COURTEN.*

A very simple and easy method of constructing a support is to cut a piece of wood, five millimetres in thickness, into the shape of a triangle such as would be circumscribed by a circle twenty centimetres in diameter. In the centre of this triangle is fixed a handle formed by a piece of wood ten centimetres long, and the extreme end of each angle having been removed, a piece of ordinary india-rubber is attached by means of sealing-wax at the three extremities, care being taken that the material is in all three cases of like thickness.

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* Continued from p. 367.

* *Moniteur de la Photographie.*

The support is then heated to such a degree that the rubber becomes sticky and remains so on cooling. By pressing it lightly with the finger it is easy to determine whether the material possesses that light tenacious quality which suffices to retain the surface of a glass plate. The india-rubber will preserve this pitch-like character for several years, and when it becomes at all dry it is re-heated and again becomes softened.

The plates will be found to adhere very safely when placed in contact, even if held in a vertical position. The shape of the wood may be varied at pleasure—round, square, or oblong frames being sometimes more convenient. The size above mentioned is suitable for glasses from half-plate to twenty-four by thirty.

The support is especially useful for employment with plates of extraordinary size.

Rome, 25th June, 1869.

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ARTIFICIAL FREEZING AND REFRIGERATION.

BY B. H. PAUL, PH.D.*

In most industrial operations, especially those involving chemical alteration of the raw material employed, a greater or less increase of temperature is essential for effecting the desired object, inasmuch as chemical action is generally facilitated by heat, and, therefore, the means of producing heat and of augmenting temperature have hitherto attracted far greater attention than the reverse procedure of abstracting heat and reducing temperature. But, though it is most frequently the object of a manufacturer to stimulate chemical change by increase of temperature, there are cases in which it is desirable to hinder the natural tendency to chemical change, even within the ordinary range of atmospheric temperature. For these and other purposes it is requisite to abstract heat and reduce the temperature. The natural means of effecting this object is furnished by ice, which has now become an article of commerce, and is largely employed in several manufacturing operations, as well as for purposes of domestic economy.

Prior to the year 1840 little or no ice was imported into this country, but about that time the Wenham Lake Ice Company was formed, for the purpose of bringing over ice from a lake some distance from Boston, in the United States. This enterprise does not seem to have been very successful at first, and eventually it was found that ice could be obtained with greater advantage from Norway, whence the ice now imported into the United Kingdom is chiefly derived.

In 1864 the quantity of ice imported is stated to have been over 30,000 tons.

The amount of waste in the transport and storing of ice will, of course, depend much on circumstances of a variable nature—such as the heat of the weather and of the sea during the voyage, the season and time of storing, &c. It appears to amount to about thirty or forty per cent. of the quantity shipped.

The price of ice has varied, according to the season, from 18s. to 40s. and even 60s. per ton. Besides its use for domestic purposes, which cannot be very great, it is largely used in curing pork and fish, and by brewers during summer.

Altogether the consumption of ice in this country is insignificant as compared with the consumption in America, where it is considered as a necessary; and it is stated that in the city of Boston alone, as much as ninety thousand tons a year are used.

The price at which ice is sold retail—viz., about one penny per lb., or at the rate of from £7 to £9 per ton—is a very great bar to its more general use in many instances.

The advantages experienced by the use of ice for various technical purposes, and the increased demand for it, naturally led to the question being raised whether ice could not be produced artificially at such a cost as to compete with the natural sources of supply, and in such abundance as to admit of its use being extended. Artificial refrigeration has long been practised on a small scale by means of what are termed freezing mixtures. The following table gives the composition of several kinds of freezing mixtures, together with statements of their efficacy:—

Composition and Effects of Freezing Mixtures.

Ingredients.	Parts by weight.	Temperature produced, starting from 50° F.	Reduction of Temperature.
Nitrate of ammonia	1	4° F	46°
Water	1		
Nitrate of potash	5	10°	40°
Chloride of ammonium ...	5		
Water	16		
Nitrate of ammonia	1	−7°	57°
Carbonate of soda	1		
Water	1		
Crystallized sulphate of soda	8	0°	50°
Hydrochloric acid	2		

The reduction of temperature produced by these mixtures is due to the absorption of heat accompanying the solution of the salts. In like manner, mixtures of snow, or finely-crushed ice, with half its weight of common salt, or with one and a half times its weight of crystallized chloride of calcium, will give a reduction of temperature from 32° to —4° and —50° F. respectively, if the salts and the vessels in which they are mixed with the ice be previously cooled to 32° F.

Freezing mixtures of this kind are often very useful for domestic and other purposes, but they are quite unsuited for most of the manufacturing operations in which reduction of temperature is a desideratum.

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PARCHMENTIZING OF PHOTOGRAPHS BY TREATMENT WITH SULPHURIC ACID.

BY JOHN SPILLER, F.C.S.*

The prints which I have the honour of submitting to the inspection of the members this evening are some illustrations of the wonderful power of sulphuric acid in effecting the conversion of paper into a parchment-like substance, without destruction of the delicate image in reduced silver which constitutes the photograph as ordinarily printed. These specimens have an additional interest from the circumstance of their having been prepared more than twelve years ago by my predecessor in office, Mr. Wm. Crookes, for the purpose of illustrating a lecture delivered by the Rev. John Barlow, at the Royal Institution; and they were afterwards shown at a meeting of this Society in May, 1857. I have also the results of treating several different qualities of paper with sulphuric acid according to the directions given by the patentee, Mr. W. E. Gaine. It will be seen that blotting-paper and sparingly-sized printing papers gain most, both in strength and transparency, by treatment with the acid, whilst the highly-glazed or enamelled kinds, such as "cream-laid" writing-paper, seem quite unfitted for this process, as also are those containing large proportions of Paris white, ultramarine, and other mineral matters.

In order to convert paper into the so-called "vegetable parchment," it is immersed for a few moments in a cooled mixture of two volumes of sulphuric acid and one of water, removed, and quickly washed by being plunged into a plentiful supply of cold water. All traces of free acid are finally removed by prolonged immersion of the sheets in water, assisted, if deemed necessary, by a small addition of ammonia to the last washings. The product is a tough material, similar to vellum or parchment, more transparent than the original paper, and usually presenting a lustrous surface. It has a tendency to contract unequally in drying, so that the sheets have a crumpled aspect; this can, in a great measure, be overcome by straining on a frame whilst still moist, by rolling, or drying under pressure; and there is less difficulty in mounting the partially converted sheets which would commonly result from the treatment of photographs. For our special purposes it would not be considered necessary to transform the entire substance of the paper into the vegetable parchment, but rather to limit the action to that extent which suffices to close the pores of the paper, and communicate an almost imperceptible glazing to the picture; and this process lends itself admirably to the finishing of enlarged prints upon plain paper.

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* Condensed from the *Journal of the Society of Arts*.

* Read before the London Photographic Society.

Referring, in the next place, to what has occurred during the twelve years' existence of these prints, it will, I think, be generally admitted that the parchmentized portions have survived unimpaired, or been proof against those influences (damp from the air and traces of hyposulphite) which have had time to affect injuriously the unprotected parts of the print. There is greater vigour and a superior tone in the treated halves of the photographs, and the hygroscopic capacity must be considerably lessened, whilst the retention of hyposulphites is a chemical impossibility. By direct experiment I have ascertained that diluted sulphuric acid of from 10 to 15 per cent. effectually breaks up the constitution of hyposulphite of soda diffused through paper; and with stronger acid the destruction of the fixing salt is rendered absolutely certain. I am indebted to Mr. Crookes for the interesting collection of samples on the table; in those mounted side by side can be seen the degree of contraction in dimensions (about a quarter of an inch in the foot, or 2 per cent. linear reduction) under which he worked. Accompanying them are examples of the title pages of English and foreign photographic journals converted into parchment, and showing greater amounts of contraction.

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"REMBRANDT EFFECTS."

Mr. W. Kurtz, one of the most artistic transatlantic photographers, writing to the *Philadelphia Photographer* on the popular so-called "Rembrandt Effects," says:—"This style of picture was made by me over two years ago, of a number of persons, especially artists; as those of Messrs. E. Leutze, Lambdon, Kauffmann, Oertel, &c. The negatives, as well as the gentlemen, are still in existence, with the exception of the lamented Leutze. These pictures were called rather 'Rembrandtish,' not 'Rembrandts,' and were never so baptized by me; I modestly called them 'Shadow Effects.' The pictures I produced, although called 'very fine,' 'magnificent,' 'superb,' &c., were, according to my ideas, very poor. I knew full well that Rembrandt never took a black opaque canvas in order to show a few patches of white paint to greater advantage, nor was he ever known for vulgar contrasts, such as black and white. On the contrary, on his dark, shadowy, but transparent background, the figures are beautifully relieved, and in the deepest parts of his drapery the detail is nicely suggested. Between his highest lights and strongest shadows you will find every imaginable gradation of tint, the same as with other artists of his time; he, however, throwing in an extra high light, which his followers and pupils were unable to reach, his high lights telling out, because he was very sparing with them. Rembrandt's pictures are all half-tone and shadows, deep shadows, but not blackness, as with my 'photos.' Some of my pictures, however, came out pretty well, rather odd in effect, if you will, but still pleasing, especially one of 'General Boum' (Mr. Beckers, of the Opera Bouffe). Shadows, deep shadows, must be photographed, and this I did not find difficult to do, by using reflectors and counter-reflectors, which I have lately constructed, and a full description of which I shall be most happy to forward you should you so appoint. But what I did find difficult to do, was to preserve the drawing and proper shading of the light parts, such, for instance, as the shirt front, sleeves, collar, &c., on the shadow side. It requires the utmost care to prevent a bad 'squint' in the sitter, and, as the shirt collar will reflect better than a black velvet coat, and a glossy eye better than the rough skin, the operator will find it rather hard to please an artistic eye with his production.

"It will always be a difficult thing to produce this most charming, but also trying picture; that is, if you treat portraiture seriously, as it should be treated. It is, of course, much harder to light a sitter in this manner than in the ordinary way, and the technical part of the work requires also more care. The background must have a great deal of attention. For example: a gentleman with dark hair and with dark draperies should not be taken on a dark background of the same weight and colour as the deepest parts of the shadows; it should be lighter, to give relief to them. It will then be sufficiently dark to throw out the high lights on the face. Again: a lady with light hair, fair complexion, and white draperies, should have a different background, since one is very apt to get too much strong and harsh contrasts where harmonious contrast is what is desired.

"But I forget. I asked for your kind permission to make a 'few remarks,' and here I am in a fair way to fill your whole journal. In conclusion, then, I should like to correct a statement made by Mr. Baker about statuary taken from the dark side, relieved by a still darker background (black velvet). I saw similar effects in some Daguerreotypes eighteen or twenty years ago, in Frankfort-on-the-Main, and the same effects about nine years ago in London. A 'bust' is easily taken in this way, for its skin, hair, draperies, &c., so to speak, are all white, or of a similar colour; but not so with a human figure."

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Correspondence.

SEA-GULLS AND OTHERS.

Sir,—Your contributor, "The Old Photographer," in a kindly notice of our picture of "Sea-gulls," in this month's "Echoes," concludes by saying it would be interesting if Messrs. Robinson and Cherrill would communicate any peculiarities in the mode of working in producing such a picture. In answer to which we should be glad if you would allow us space for a few words.

It must be well known to your readers that neither of us have ever made the slightest attempt to keep any secret connected with photography, but that, on the contrary, we have been, perhaps, too ready to rush into print when we had anything—however unimportant—to communicate, that we thought might be of use to our brethren in the art. It must be also known to your readers that other correspondents have suggested that it was not only useless, but injurious, to the profession to give any information upon "dodges" (by which, we suppose, they meant anything not generally known), as it uselessly enlightened the public, and was of no value to photographers, as they—the dodges—would suggest themselves to "any ordinarily intelligent printer." To answer, then, the question raised by the "Old Photographer," we must refer him to some of those who know so much about it—"ordinarily intelligent printers," in fact.

There is a story told by Peter Pindar of George the Third and an apple dumpling. The king was puzzled to know how the apple got inside without a seam showing in the crust (just as those who think the "Sea-gulls" are printed in by combination printing are surprised to find no indication of a join):—

> "Very astonishing indeed!—strange thing!"
> (Turning the dumpling round, rejoined the king.)
> "'Tis most extraordinary then, all this is—
> It beats Pinetti's conjuring all to pieces—
> Strange I should never of a dumpling dream!
> But, Goody, tell me where, where, where's the seam?"
> "Sir, there's no seam" (quoth she); "I never knew
> That folks did apple-dumplings *sew*."
> "No!" (cry'd the staring monarch with a grin)
> "How, how the devil got the apple in?"

which is exactly the question just now, and which we shall leave the "ordinarily intelligent printer" to answer. His method of proceeding would probably be as follows; and far be it from us to say he would not succeed. He would, doubtless, go, camera in hand, to the shores of the briny ocean; he would probably smoke his comtemplative pipe. and await with some impatience the arrival of his feathered friends. He would certainly adopt almost any simple "dodge" for rapidly focussing them. and getting the dark slide into its place before they moved. He would possibly not attempt to use head-rests. The exposure would be easily managed with any well-known "dodge," and a fifteen-grain developer, it is well-known, will do wonders when applied to the right side of the plate. But after all this intelligence had been expended, might there not arise from the heated air of the tent, even as the developer flows in ceaseless waves, and as the one gull looks for the other, the famous exclamation of Hans Breitmann—

"Where is dat barty now?"

The fact is, that in photography every one knows everything, or, if they do not, it is their own fault. Everything known in photography has been published in the journals at one time or other, and the only difficulty of getting knowledge arises from the mass of matter which must be looked through before you can come to any reliable information. There is actually *no* new principle involved in the photography of the picture you have before you, and, without doubt, if "any ordinarily intelligent printer" *had thought of it*, he could have done it long enough ago. It is with photography as with every other art, more difficult to plan than to execute. It takes a thousandfold more skill, and knowledge, and power, to make the sketch of a thoroughly original picture, than to paint it.

One thing, by way of hint, we would suggest, *apropos* of instantaneous pictures. It is this. It has long been considered by men of science that the moment light reaches the plate *an* effect is produced. The time needed to produce the amount of effect required in a photograph is dependent on the nature of the developing agency. Here is an illustration very much to the purpose. Some years ago the exposure necessary for a dry plate was—let us say, for example—five minutes; but after Mr. Leahy had discovered and described the use of the alkaline developer, all the exposure necessary for the same plate would have been one minute.

Here we have an example of a discovery in development very materially shortening exposure; if, therefore, we could get an agent a thousand times more powerful as a developer than the one usually employed, or if we knew how to accelerate its action to that extent, we could do with one thousandth part of the light we now use, or, what comes to the same thing, with the same light an exposure of only one thousandth of the usual time.—Yours very truly, Robinson and Cherrill.

Tunbridge Wells, August 4th, 1869.

PAPIER-MACHE FOR LARGE BATHS.

Dear Sir,—Mr. S. Thompson, in his "Sketches of Travel" published in your Journal of 23rd ult., complains of the extreme brittleness of ebonite baths, and adds, that "any one who would invent a bath of large size as reliable as glass for purity without its fragility, would confer an everlasting boon on all photographers who work larger plates than nine by seven." Now I think I can suggest this desideratum.

Nearly or quite twenty years since, when calotype was in fashion, Messrs. Jennings and Betteridge, of Birmingham, made for me some papier-mache dishes which I used for exciting my paper, and which answered the purpose admirably. They have been in use ever since, and are now as good as new. They are beautifully flat and even, and will bear a considerable amount of rough usage; neither nitrate silver, acids, nor alkalies affect the surface. Indeed, concentrated cyanide is the only chemical which appears to injure the polish. It is strange that it has never occurred to anyone to make either baths or dishes of this material. There would, I imagine, be no difficulty in manufacturing the former. The papier-mache should be of the best description, which is made from sheets of paper, and not pulp, and should be varnished in the same way as the more expensive kind of tea trays.—I am, dear sir, yours truly,

Cheltenham, 30th July, 1869. Baynham Jones.

PHYSIOGNOMY IN THE STUDIO.

Dear Sir,—When the legal theory which supposes that the actions of a wife are ruled by the will of the husband was expounded to the illustrious Mr. Bumble, that parochial dignitary waxed wroth, and, crushing his hat emphatically in both hands, as a prelude to giving vent to the tumult which raged within his slender brain, he at length found voice to ejaculate, "The law is a ass, a idiot!" Then, with a touch of wit, mighty for a beadle, he dismissed the painful topic from his tongue with a wish that the eye of the law might at an early period glean wisdom from experience. Bumble was not only a parochial beadle, but, in parochial matters, he was also a parochial genius, who, on all fitting occasions, glorified the immaculate "board," and the "board" were glorified in him when, with much warmth of feeling, he deigned to offer comments on the humane invention introduced by the parochial guardians, by whom the balance of life and death had been so delicately adjusted that the turning of the scale in the direction of lingering life or of galloping starvation was but a question of a spoonful of oatmeal added to or withdrawn from the paupers' daily rations. Bumble shone as a beadle; but Bumble's philosophical reasoning would have done honour to many an acknowledged member of the modern school of philosophy. Bumble would have applied to theory *the* test of practical experience. And a lively recollection of his position as a hen-pecked spouse, so contrary to his former fond hopes that the fullest measure of happiness could be extracted from a tioin' of arts and house-keepin's with the false Mrs. Corney afforded proof indisputable that in the contest between theory and experience the eye of the law would come off second best. And not only the eye of the law, but, in many instances, the ruling of the most sagacious, would be proved fallacious, if their pet theories were tested by that most powerful of all tests, which Bumble graphically described as experience. I shall endeavour to illustrate this remark with an example.

"Protagoras," in his cleverly written articles on "Masks and Faces," has favoured your readers with some admirable remarks on the necessity of applying the science of physiognomy to the practice of photography. With every comment, I might say every word, contained in the essays that apply the matter in a theoretical form, I cordially agree; but his method of practical application has plunged me into a slough of disappointment, which induces me to exclaim, "If 'Protagoras' is right in his conclusions, either physiognomy or phrenology 'is a ass, a idiot,' or the 'eye' of my knowledge of human nature has grown defective!" I have clearly defined before my mind's eye that pompous, self-conceited specimen of humanity painted by the ready pen of "Protagoras," and, in imagination, I hear his authorative voice, "Oh! ah! here! I want my likeness taken." Short, sharp, decisive are his commands, and, as he gives utterance to his wishes, I read in that countenance, "No surrender! *I intend to be taken just as I please; so be good enough to keep your opinions to yourself.*"

And shall I dare openly to confess my possession of an independent opinion with a caution as to results staring me in the face? Certainly not. "Love of approbation" would sound an alarm; "self-esteem" would fly into rebellion; and the upshot of the matter would be, that my patron would abruptly close the interview and acquaintance, or he would remain to be photographed with an iron predetermination that of all men in the world I was the least able to do his dignified countenance justice, simply because I had a notion of my own, and that notion would prevent me from acting upon superior instruction. No, no, Mr. "Protagoras;" emphatically no! I sincerely admire your rules, but their practical application, as you recommend it, is a mistake; and should any of your numerous readers feel disposed to apply the indisputable test of experience, they would soon find cause to quote Mr. Bumble, and pronounce your law of physiognomy "a ass, a idiot."

The whims, humours, and caprices of mankind have been to myself an interesting and a life-long study: and the budget of anecdotes I could supply as the results of my observations would fill a decent-sized volume. I shall, however, trespass only on the limited amount of space needed for one that bears on photography.

Some years ago, when glass positives ran rampant, due notice was given me that an old lady, who was held notorious for giving everybody all the ill-will and trouble her splenic nature could invent and give, proposed honouring me with a "sitting," and I was challenged to give satisfaction, or to cause the old lady to speak no good word to any third party concerning me. I at once accepted the challenge, and, in due course, I not only succeeded in giving my troublesome client the greatest of satisfaction as far as her portrait was concerned, but the verdict passed on me by the old lady to her astonished friends was, that among all men living I was the nicest young man she ever met with. A second powerful example presents itself to my mind, which a few words will describe. I once succeeded in "winding around my finger" a naval bully, whose sayings and doings, if publicly known, would strip him of honours he at this moment unworthily bears. I wove a chain around him which made him pliant in my hands. Yet to others, who, like myself, were subject to his tyrant rule, he continued to play the dangerous bully. Perhaps, Mr. Editor, your readers would like to know how the acts of conjuration I have alluded to were performed. I reply: Simply by going down, *down* into the depths of human weaknesses in quest of the weaker points; and, from a recognition of character, I was enabled to improvise means to serve the occasion.

If we would hold an influence over the vagaries and caprices of our fellows, the golden rule to be rigorously observed is just this: Talk, and talk; but let your conversation point to one goal, viz.,—Men generally love to be on good terms with themselves. Make them so. Carefully avoid alloying the pleasure with a "I like this or that;" and when you once succeed in putting a man or woman in the happy condition I have briefly indicated, act warily to the end, and the game is your own, play it as you like. Pope enters exhaustively into the pith of my ideas on the management of fractious humanity, in the lines I here quote:—

> "Men must be taught as if you taught them not,
> And things unknown proposed as things forgot."

"*Flattery! deceit!*" methinks I hear "Protagoras" exclaim. Nay, "Protagoras;" "write *me* down an *ass*" if I err in my judgment. "Rover! Rover! come, poo-ar fellow!" Rover comes, and is kicked for his pains. Such, in sooth, is that world which Shakespeare made a stage on which *his* players fretted; but in these days humbugs play harlequin honesty that can fret, laugh, pray, sing psalms, preach sermons, give alms; and when, like the pharisee of old, they thank their God that they are unlike other men, it is because they gloat over their superior cunning, which enables them to gain that wealth from the unwary which stands now-a-days in lieu of godliness. "*Masks and Faces!*" Lads, lasses, servants, masters, ministers (political and clerical), kings, queens, princes—all, in their turn, mask themselves with flattery. Flattery is an institution—a recognized power; but it is a power that demands a skilful application. Never should it be given in rude, rampant doses, but gently, judiciously, and in such forms as experience alone can suggest. As oil removes frictional obstructions from revolving machinery, be it never so ponderous, so act small doses of flattery when indirectly applied to remove the hindrances to satisfactory intercourse and dealings between man and man.

I now conclude a lengthened communication by expressing a hope that "Protagoras" will accept my remarks in the same kindly spirit in which they are written; and I further trust that, in his continuation of his clever and interesting essay on "Masks and Faces," he will point out to his readers the fact that, although observation will do much in an attempt to gain an insight into character, it needs an inborn gift to enable one to tear asunder the mask of caprice from a face that continues to smile in ignorance of its loss. With this remark, I subscribe myself, yours faithfully,

W. T. Bovey.

THE GOLDEN SYRUP SOLUTION FOR WET PLATES.

Sir,—Can you tell me why I cannot make the syrup solution, suggested by Mr. Robinson, answer in my practice? I invariably find two messes produced by the use of it. The one is in the form of a stain (not caused by the want of alcohol, as it flows very smoothly) seemingly occasioned by the solution acting as an intensifier, and doing the work unevenly. The moment the syrup is poured on, it appears to darken the film very considerably, but, as the wave flows over the plate—let it go ever so evenly—it leaves markings, more or less resembling in form the outline assumed by the wave in various parts of the plate.

The second mess is in the form of deposit—evidently reduced silver—formed in the course of developing, and subsequent re-developing with the same solution, and silver added; which deposit appears to be stuck so hard upon the film by the syrup, that no after amount of washing will remove it, and so causing innumerable spots all over the print. The only remedy I find for this is a large amount of acid in developer, and citric acid in silver for re-developing. But the drawbacks of this mode of proceeding are, a prolonged exposure, and a somewhat harder class of picture than I admire.

Can you help me in this matter? If so, I should feel very thankful, because the system has so many advantages for out-door work, that I am very reluctant to give it up.

Perhaps, if I give my working formulæ you may be better able to suggest a reason for the failures. They are:—

Bath.—Forty grains to ounce, the bulk of it constantly kept in such sunlight as we get; the *working* bath being filtered from this in the morning, and returned to it in the evening.

Collodion.—Rouch's and Mawson's.

Developer.—Usually—

Saturated solution of iron	2 ounces
Glacial acetic acid	1 ounce
Water	13 ounces

For intensifying I use this developer and a few drops of bath solution above.

You see that my chemicals are few and simple, and in the studio, where there is plenty of water at hand for washing immediately after intensification, nothing could be more satisfactory.

If you can help me in your correspondents' columns, you will confer a benefit on your constant reader,

August 3rd, 1869. Try Again.

[We are puzzled by one part of our correspondent's letter. Why does he use the golden syrup in the studio at all, as from his letter he appears to do? To come to his difficulties, however, and aid him as far as we can. The markings produced by the flow of the syrup solution appear to be caused by the irregular arrest of the process of development. It seems probable that you apply the syrup before the process of development is completed, and that you do not drain off the developer. In such case, as the process of development is still going forward, the slow and irregular flow of the syrup might cause irregular markings. The second difficulty is due to the mode of working. You use a somewhat strong developer, and add to it a portion of the bath solution—a practice we never approve. For adding to the developer a fresh and weaker solution of silver is desirable. To add a portion of the bath solution to a strong iron developer without a great deal of acid is a plan which certainly conduces to stains of reduced silver. Instead of the bath solution for intensifying, use a fifteen-grain solution to each ounce of which twenty grains of citric acid have been added.—Ed.]

Dear Sir,—Having read a great deal about wet plates without water, I determined to try the experiment the first opportunity. Having an engagement a few days ago to photograph some equestrian portraits, I took the opportunity of trying the golden syrup dodge; but judge of my surprise, on reaching home, to find all the plates smeary, especially in the middle of the plates, just a kind of plate that would appear on developing and not washing the plate. As wet plates without water would be a great boon providing you could rely on certainty after reaching home, I should feel greatly indebted to any of your numerous correspondents who would help me out of this difficulty. I asked a friend's advice who has had great experience in out-door photography; he has also met with the same failure.—Yours obediently, P. M.

Sydenham, August 2nd, 1869.

[Take care and drain the plate before applying the syrup. Of course, if the golden syrup is poured in the middle of a plate in which the process of development is still going on, stains are sure to arise. See answer to "Try Again" above.—Ed.]

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Proceedings of Societies.

Photographic Society of Marseilles.

A meeting of the Society was held on the 2nd June, M. Tesseire, President, in the chair.

Communications were received from MM. Marion, Ducos du Hauron, and Constant Delessert.

M. Marion's communication was accompanied by some specimens of carbon printing of various tints—black, grey, red, blue, &c. Their chief characteristic was excessive softness and gradation of tone, proving, therefore, that printing in pigments was well adapted for the purposes of portraiture. In some of the specimens the half-tones were, indeed, somewhat too delicate; in all, the shadows were beautifully transparent.

MM. Jacquemet and Vidal testified to the good quality and efficiency of M. Marion's gelatinized carbon paper, of which they had made trial, and exhibited pictures produced upon the material.

M. Vidal urged the members, one and all, to try their hands at the carbon process, which they would find exceedingly practical and straightforward, although, as a matter of course, some of the manipulations required a little skill and experience, which would, however, soon be acquired. This was, indeed, the case with all known photographic processes, and one could not expect at the first trial to obtain uniformly perfect results. Many are discouraged at the first failure, while others are fearful to begin, from the fact that they are unwilling to embark upon what appears to them an entirely strange and novel enterprise. M. Vidal was convinced that progress would be made the sooner by the adoption of carbon printing on every hand, and thus securing an extended practical employment of the same.

The President thanked MM. Marion and Vidal for their communications.

The Secretary remarked upon the new heliochromic process brought forward by M. Ducos du Hauron, and exhibited some specimens of printing by the method, which accompanied M. Ducos's pamphlet.

M. Vidal made some complimentary remarks upon the success of M. Ducos's investigations, and had no doubt that at no very distant period some benefit would be derived from this method of painting, in which the assistance either of crayons or of brushes was unnecessary.

The Secretary exhibited a series of specimens forwarded by M. A. de Constant, together with a communication explaining the mode of printing by means of which the different pictures had been produced. M. Constant had laboured assiduously with a view of determining the best mode of positive printing, and the specimens submitted had been prepared with a view of comparative examination. The different negative processes at present competing for public favour were likewise engaging the serious attention of M. de Constant.

The President thanked M. Constant for his interesting communication, and proposed that the meetings of the Society be postponed until the 1st September next.

The proceedings then terminated.

Banquet given to M. Poitevin by the Photographic Society of Marseilles.

The *Moniteur de la Photographie* publishes the particulars of a banquet given by the members of the Photographic Society of Marseilles to M. Poitevin, on the occasion of a short sojourn by that gentleman in the south of France. The entertainment of M. Poitevin was deemed the more opportune at the present moment from the fact that the carbon process, upon which that gentleman has worked so long and so successfully, is now on the point of being universally adopted and vulgarised; and in thus honouring M. Poitevin, the Marseilles Photographic Society have again marked their sense of the importance of that branch of the art to which their efforts have been mainly directed, viz., the production of permanent photographs.

M. Tesseire, the president on the occasion, in proposing the principal toast, enumerated the manifold claims which their guest had upon the glory of the photographic world, and cited the various discoveries due to that eminent chemist; he concluded by tendering M. Poitevin the dignity of honorary member of the Marseilles Photographic Society.

M. Poitevin expressed his sincere thanks for the sympathy entertained in his welfare, and was greatly moved by the kindly and flattering mark of friendship bestowed upon him.

MM. Vidal and Jacquemet likewise made some remarks suitable to the occasion, in proposing success and progress of the art of photography, in regard to which M. Poitevin's discoveries would always be associated.

The assembly was a most brilliant one, the company including the principal amateurs and professional photographers in the neighbourhood, and likewise many corresponding members of the Society resident in the principal towns of France. The proceedings passed off successfully, and the occasion will long be remembered with lively satisfaction by all disciples of the art who assisted thereat.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Society was held on Tuesday evening, the 27th ult., at the Free Public Library, William Brown Street, Mr. J. Henderson, Vice-President, in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. J. S. Tyerman was elected a member of the Association.

Accounts were given of the two excursions. The first, to Chirk, on the 7th ult., was very satisfactory, and many good views were taken there. The members expressed their appreciation of the kindness and thoughtfulness of their President on that occasion, who, in addition to his invitation for the members to dine with him, presented to each a print of the group, photographed by him at Chirk. The group was taken on an ordinary collodio-bromide plate, and was most successful. A hearty vote of thanks was passed to the President.

The Rev. T. B. Banner complained of the laxity of members in not conforming to the Secretary's wish to make known to him their intention or otherwise of going to the excursions, without which no approximate notion could be formed of the probable number of the party until the last moment.

Mr. Higgin gave an interesting account of the Miller's Dale (Derbyshire) excursion on the 21st inst.

The Chairman deemed it advisable to have another excursion before the summer expired, but considered one excursion during any month as much as business and other engagements would permit of.

Mr. Hughes advocated arrangements being made by which the Association could visit different localities in company with the Naturalists' Field Club, and this idea was warmly supported by Mr. Murray and others who were connected with that body, the advantages offered being cheapness and convenience of transit; but nothing was decided upon.

The sweepstakes for the best picture taken on the excursion to the Valley of the Weaver last month was drawn by Mr. Higgin, being awarded by the appointed judges, Messrs. Hughes and Murray. The prints were afterwards presented for the Society's album.

During the evening prints were exhibited by the Rev. T. B. Banner, Messrs. Guyton, Murray, Higgin, Mawdsley, and Henderson, the latter gentleman also contributing some fine prints of Californian scenery taken in the Yosemite Valley.

Talk in the Studio.

An American Relief Fund.—The formation of a relief fund in connection with photography was decided upon at the recent meeting of the National Photographic Association in the United States. The project which seemed to command the most favour in the discussions was one in principle resembling mutual assurance. The especial plan in question was designed for relief in case of death, the representatives of the deceased member of the Association receiving from the treasurer a sum formed by every surviving member contributing one or two dollars. In an engineers' society it was stated a sum of $6 000 (upwards of a £1,000) was so contributed recently for the benefit of the widow of a member. A committee with a sum of $500 in hand was appointed to consider the matter.

Patent Laws.—Mr. Bright, on Monday night, in the House of Commons, declined to pledge the Government to bring in a Bill for the amendment of Patent Law next session, and Mr. Macfie gave notice that in case no action was taken by Government, he would, next session, propose a commission or a committee of enquiry to examine the subject

Correcting Bath.—After correcting the bath by the addition of permanganate of potash, nitric acid may be added to an appreciable degree without injury.—*M. Herzog*, in *Photo Archiv.*

Tanno-Gelatine in Developer.—Mr. H. T. Anthony recommends the following as an excellent developer:—"To one ounce of a warm ten-grain solution of gelatine add three drops of a fifteen-grain solution of tannin; shake well until re-dissolved, when add one drop of ordinary iron developer, and it is ready for use. To keep the gelatine, add a few drops of formic acid."

Blistering of Albuminized Paper.—A correspondent of the *Philadelphia Photographer* says:—"To prevent the blistering of albumen prints I use conc. sulph. ether in the hypo fixing solution (about a quarter ounce of ether to twenty ounces of solution).

Photographic Bank Notes.—A sharper in New York has been advertising to sell "exact copies of U. S. Treasury notes at the rate of $1000 worth for $80," &c. He supplied photographic "copies" to the would-be speculators in counterfeits.

Carbon Printing.—A paragraph has been going the round of the press to the following effect:—"Her Majesty has commanded Mr. Woodward, the royal librarian, to edit a series of exterior and interior views of Windsor Castle, together with descriptive text. These views, which will include several of the private apartments, are from the photographs, printed in permanent colours by a new process. The volume will be published by Messrs. Moxon." We presume that carbon printing is meant.

Extensive Enlarging.—The Editor of the *Philadelphia Photographer* mentions a recent visit to a solar printing establishment in Philadelphia, where it is evident an enormous business is done. He says:—"A very curious sight may be seen any clear day. Two rows (nine each) of giant instruments, with upturned faces, may be seen silently but surely doing their work, and the busy operatives moving among them here and there continually, adjusting and fixing them properly. The sight is a novel one. Mr. Moore, the principal, is continually driven with work, and his results are excellent."

The Eclipse.—The total eclipse of the sun on the 7th of this month, invisible in this country, but visible in some parts of America, will be photographed by various of our friends in the United States. Dr. Curtis and a corps of assistants from the Washington Observatory have been some at Des Moines, a favourable site for observation, and have been practising astronomical photography. Prof. Morton has organized a triple party under the auspices of the Nautical Almanac Office, and has secured the High School Equatorial of six-inch aperture and ten feet focal length. The party will consist of the following gentlemen:—Prof. Henry Morton, Franklin Institute, Philadelphia; Prof. A. M. Mayer, Lehigh University, Bethlehem: Prof. C. F. Himes, Dickinson College, Carlisle; Mr. E. L. Wilson, Philadelphia, Pa.; Mr. H. T. Anthony, New York; Mr. W. J. Baker, Buffalo, N. Y.; Mr. O. H. Willard, Mr. Mahony, Mr. H. C. Phillips, Mr. J. Zentmayer, Mr. J. C. Browne, Mr. E. Moelling, Mr. O. H. Kendall, Mr. James Cremer, Mr. W. H. Rhoads, Philadelphia, Pa. This will constitute the photographic portion of the party, allowing five operators in all to each instrument, who will proceed for work to Burlington, Iowa.

Uniformity of Size in Photographic Apparatus, etc.—Dr. Vogel says:—"An interesting request is at present before our Society. We are asked to lend our influence to bring about a uniform measure of cameras, copying frames, plates, etc., etc. And such an agreement would indeed be a great blessing. It is very troublesome at present to convert the different English measures to our own standard, and *vice versa*."

Reversed Negatives.—In Albert's printing process reversed negatives are necessary. Dr. Vogel says:—"Albert himself proposed the employment of glass prisms, but it is difficult to obtain perfect prisms, and Steinheil, of Munich, the well-known inventor of the aplanatic lens, recommends, in place of the prism, a silvered mirror. It is not so very difficult to make these perfectly plane. The silvered side, and not the glass side, is used; and this is easily kept bright by means of a velvet brush. These mirrors, to the size of six inches, have been made by Steinheil. They are not only much cheaper than prisms, but absorb also much less light."

Test for Prussic Acid.—Professor Schonbein describes a reagent discovered by himself, and delicate enough to bring out to view even the millionth part of a drop, whether diluted with water or vaporized in the air, a circumstance affording a new proof of the incalculable divisibility of matter. The test-paper was of the kind called filtering-paper, and was soaked in a solution of three grammes of guaiacum resin in hundred grammes of alcohol. To use it, a solution of ten deci-grammes of sulphate of copper in fifty grammes of distilled water should be made, and the paper, which is white, cut into narrow slips. One of the latter being wetted with the solution, it is then exposed to the action of the minute quantity of hydrocyanic acid dissolved in water, and suspended in the air; the paper will then instantly turn blue. Dr. Scouttetenn remarks that these slips of paper will be useful in examining the quality of the medicinal waters or syrups containing a very small quantity of the acid. The paper need only be placed on the unstoppered neck of the phial containing the medicine, and the blue colour will at once become visible.—*Medical Press and Circular.*

Behaviour of some Double Cyanides towards Ammoniacal Solution of Silver.—The same journal gives the following by M. Weith. With the view of separating the cyanogen from ferrocyanide of silver by means of peroxide of mercury, according to a plan published by Professor Rose, the author of this paper found that this decomposition only takes place very incompletely and slowly. The same was observed when it was tried to decompose the aforesaid ferrocyanide by means of hydrate of potassa. The decomposition is, however, very readily and completely effected by boiling the ferrocyanide of silver with liquid ammonia; in that instance, the iron is separated as oxide, while the solution contains cyanide of silver and cyanide of ammonium—

$$Cy_6FeAg + 2NH_3 + H_2O = FeO + 4AgCy + 2NH4Cy.$$

The author calls attention to the fact that it is stated that ferrocyanide of silver is insoluble in liquid ammonia. This is right to a certain extent; but even in the cold, and more so on being gently heated, this fluid will exhibit, after filtration, and on addition of a few drops of dilute sulphuric acid, a more or less copious precipitate of cyanide of silver. When ferrocyanide of silver is mixed with an ammoniacal solution of nitrate of silver, instead of with ammonia only, and heat is applied, the iron is separated as oxide; while from this solution the whole quantity of cyanogen may be separated on addition of a few drops of dilute nitric acid, as cyanide of silver. Ammoniacal solution of nitrate of silver behaves with ferro-

and ferri-cyanides of potassium, with ferrocyanide of iron (Berlin blue), and other similar compounds (cobalticyanide of potassium inclusive), in a similar manner. Ferrocyanide of copper, however, cannot be treated in this manner, since the presence of copper gives rise to separation of silver in the metallic state. The subject matter of all the other papers contained in this number has been treated in our columns already.

Combinations of Ammonia with Cyanide of Silver and Sulphocyanide of Silver.—The *Chemical News* condenses from the *Zeitschrift fur Chemie* some remarks by M. Weith. The author says that when cyanides in solution are treated with ammoniacal solution of silver, a crystalline compound of cyanide of silver and ammonia, $CNAgNH_3$, is obtained, which, either on exposure to dry air, or by being placed in water, loses the ammonia; but this compound is, after all, the author states, a true combination, and not a mixture. Sulphocyanide of silver and ammonium, $CNS.Ag.NH_3$, is obtained when sulphide of silver is dissolved in warm and concentrated ammonia. It is a crystalline solid body, which is readily decomposed on exposure to air, but which may be heated up to 200° when surrounded by ammonia solution.

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To Correspondents.

C. O.—We have obtained opal pot-metal glass of Messrs. Claudet and Houghton some time ago, but whether they keep it now or not we cannot state. The American opal pot-metal is superior to any we have seen in this country, being of a warmer and more creamy tint than the English pot-metal. We do not know of any one who imports the article from America.

A. B.—The Secretary of the American National Photographic Association is Mr. E. L. Wilson, Editor of the *Philadelphia Photographer*, South-west Corner of Seventh Cherry Street, Philadelphia, U.S.

Oxoniensis.—A lens of three and a quarter inch diameter and eight inches back focus may easily give a somewhat exaggerated effect to a head if placed at only ten feet distance from it. Nevertheless, much may be done by judicious choice of view. With skill, very effective vignette heads may be produced with such a lens under such circumstances. Of course, stopping down will tend to improve matters.

Alpha.—We believe that Grisdale's washing machine is very effective; unquestionably one of the best aids to perfect washing we know.

W. L. Noverre.—We have much pleasure in hearing from you again. Thanks. We shall mention your experience as absence of splitting in damp atmosphere.

Landscape Photographer.—You will find several articles on tents on wheels in our Eighth Volume (1864). The numbers for August 5th and 19th contain descriptions which will most probably meet your wishes.

T. W.—The matt silver stain on your negative in hot weather is primarily due to two causes: the use of a horny, repellent collodion, and the lapse of too much time between exciting and developing the plate. The use of a less horny collodion, or the addition of a drop of distilled water to each ounce of your present collodion, or the quicker immersion of the plate after coating, and the lapse of as little time as possible between exciting and developing, will aid you in getting rid of the trouble. Take care to wash your inner frames well and frequently, and allow the plate to rest on pieces of clean blotting-paper. 2. The lighting of your figure is not bad. 3. M. Adam-Salomon does not take card portraits. His only size is ten by eight.

Weston.—It is possible to take a few plates out of the packet of Liverpool dry plates and close up the packet again safely. 2. It is not desirable to keep prepared plates longer in a plate-box than is necessary, inasmuch as a plate-box is not air-tight, and it is desirable, as far as possible, to keep dry plates from the air as well as light. 3. We cannot speak with certainty of the time which Liverpool dry plates may be kept, but believe that, with care, they may be kept three months.

R. P.—You can doubtless obtain a specimen of the Woodbury printing process by applying to the Photo-Relief Printing Company, at their works, Hereford House, Brompton.

M. V. D.—We prefer a distance of three inches between the stereo lenses. Theoretically, the right distance is the distance between the human eyes, which is a trifle less than three inches. 2. For open-air lighting, the card you enclose is very good. 3. Protosulphate of iron will precipitate the gold in old toning baths. The precipitate is then treated with dilute sulphuric or nitric acid, to remove oxide of iron. The precipitate is gold in a fine state of subdivision, which, by treatment with *aqua regia*, is converted into chloride of gold.

B. A. Gilbert.—It is difficult, without a careful examination of everything, to say with certainty the cause of the mishap. So far as we can judge from your description, the plate was perhaps scarcely sufficiently washed in the first instance. As we have before explained, to make the operation, a ripe old sample of collodion is necessary, new samples often causing fogging. We regret to say that we do not know of any plan whereby a plate which fogs, instead of yielding an image, on applying the developer, can be utilized. We fear that there is no chance of obtaining the image at all now.

Blunderer.—If only a trace of pyrogallic acid have been added to the silver solution, neutralizing and sunning, or adding permanganate of potash, may restore the bath. If much pyrogallic acid were added, the bath had better be thrown down with the residues. It will not work as it is; you will doubtless find it fog.

M. F.—Dr. Liesegang's papyroxyline is in many respects a new product, although paper pyroxyline had been made before. The mode of preparing the papyroxyline, and the qualities it possesses, constitute, in many respects, essential novelty. Dr. Liesegang has never made any parade of novelty or invention, but introduced a good thing very modestly.

F.—We have before stated that we shall try the process in due time. You seem to forget that it has not yet been fully published, and that trying it with any fair chance is as yet impossible. The letters to which you refer, speaking of successful trial, are clearly enough manufactured; but that is a common occurrence in the quarter in question.

D. L.—We have not had any specimens of the process to which you refer sent to us. We have seen one which we believe was produced by it, but we are not certain. It was pretty good, but not so good as prints by Swan's or Johnson's process. There is no reason why you should not try it yourself.

C. T. W.—The best position for a studio is to stand lengthwise east and west, the chief side-light being obtained from the north. 2. The salaries of efficient operators vary from two to four guineas weekly, much depending on circumstances and locality. To commence with one operator and one printer, and possibly a lad, would be sufficient staff. The question of direct payment, or partial direct payment and commission, is one which entirely depends on circumstances. As a principle, where it can be carried out, we approve of it. 3. You will find some interesting particulars in Lake Price's Photographic Manipulation, published by Churchill.

J. J. (Belfast).—The majority of the numbers of the News for the last four years are in print, but not all. 2. Iron development for paper prints has been attempted, but not with so much success as gallic or pyrogallic acid development. 4. You will find very many articles on development printing and solar camera printing in the last half dozen volumes of the News. A simple iodide, developed with gallic acid, does not give good tones. A mixture of iodides, bromides, and chlorides will give you the best results. It is possible that the iron developed print to which you refer was produced on collodion and transferred to paper by a similar process to that described in our first article this week. 5. Condensed milk is an article prepared in Switzerland, and sold in this country by grocers and Italian warehousemen.

J. C. S.—The two Scotch clergymen to whom you refer are both big, stout men, but not otherwise especially alike. We presume that in the case to which you refer an error in labelling has been made, from associating the two men of similar character and position in the mind. We will look in the window mentioned, if opportunity serve.

F. M. Y.—Of the two lenses first mentioned, the single wide-angle lens is quicker, and gives a more brilliant image than the triple, but, not giving straight marginal lines, would not be better for copying. For pure landscape work it would be preferable. 2. The stereo lenses you mention are most excellent, and cover the plate well to the margin. The last lens about which you inquire is a good but slow lens. We are glad to hear of your success with the Liverpool dry plates.

Several Correspondents in our next.

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Photographs Registered.

Messrs. A. and G. Taylor, Cannon Street, E C,
Four Photographs of Corporal Angus Cameron.
Mr. W. Tillet, Stafford,
Two Photographs of Dr. Cowie, Bishop of Auckland.
Mr. J. Barratt, Torquay,
Photograph of the Yacht "Kate."
Mr. Gillo, Bridgewater,
Photograph of Lord Taunton.
Messrs. Delany and Co., Lowestoft,
Photographic Group of Officers 1st Battalion Suffolk R.V.
Mr. F. Smith, Chesterfield,
Photograph of Chesterfield Parish Church.
Mr. C. M. Dragon, Canterbury,
Three Photographs of Mr. H. Collard.
Mr. E. Whiteman, Hastings,
Two Photographs of F. North, Esq., M.P.

THE PHOTOGRAPHIC NEWS.

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ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

Part I.—Carbon Processes.

The fitness of ivory for securing beautiful effects in miniature painting has been universally recognized, and, from the earliest days of photography, attempts have been made to produce sun pictures on ivory to form a basis for the work of the painter, and so secure the truth of photography with the beauty of an ivory miniature. Even in the days of the Daguerreotype, attempts were made in this direction. The instructions were, that the tablet of ivory should first be immersed in nitrate of silver, then blackened by light, and next treated like a Daguerreotype plate. We never tried the process, but it always struck us as a very unpromising one. When the processes of photographic printing on paper were introduced, various methods of adapting the same principle were adopted, for the most part with small success. Modes of making and using artificial ivory for photographic purposes were devised. Several methods were patented, many more were preserved as secrets; but, notwithstanding this, a photograph of any kind on ivory was rarely seen, still more rarely was a good one to be met with.

Of late, considerable attention has been given to the subject, and, judging from the enquiries which we have recently received, the interest is becoming more general. As we have at times devoted considerable attention and experiment to the various modes of producing photographs on ivory, our summary of these modes, and the respective advantages of each, will, doubtless, be of service to our readers.

There are many modes of producing photographs on ivory, but these may be broadly classed as the methods by silver printing; those by iron printing; and those by carbon printing. We shall take the last first.

Carbon Prints on Ivory.—As a photograph on ivory is invariably the basis of further costly work in the shape of skilled miniature painting, and the finished portrait thus acquires a money value much beyond that of ordinary photographs, it becomes of increased importance that absolute permanence should be secured in the image which is to form the basis of the artist's work; and as, in silver prints, under all circumstances, there is some doubt of permanency, and, in relation to ivory, from causes to which we shall presently advert, there is increased cause of doubt, the use of a permanent printing process becomes imperatively desirable, and hence the importance of the carbon process for such a purpose.

There are several modes in which carbon printing on ivory may be effected; but we shall simply describe those which we have ourselves attempted with success. The first is Mr. Johnson's single transfer process. A piece of carbon tissue is sensitized and exposed in the usual way; it is then immersed in a dish of cold water until it begins to curl backwards, as described in our article on Mr. Johnson's new process, in the Photographic News, April 2nd. The piece of prepared ivory is, in fact, treated as the plate of opal glass then described. It is placed in the water, and brought into contact under water with the tissue. The ivory with the tissue in contact is then lifted out of the water, drained, and the tissue rubbed down with a broad camel's-hair brush or the "squegee." The absence of air-bubbles, and perfect contact, being secured, and superfluous moisture removed with blotting-paper, the tablet is placed away for a quarter of an hour, when it will be dry enough for development. It is desirable to avoid the use of water too hot in developing, as the ivory is apt to curl, and swell, and become rough under the action of hot water. When the development and washing are complete, the image will be found adhering perfectly to the ivory, without risk of chipping or peeling of any kind. The surface will receive water colours kindly; but working upon the picture will be still more pleasant if it be treated with "Newman's preparation."

So far so good. But there are two drawbacks to be stated, the first of which appeared to us, at the outset, a startling one. We had conceived the idea of applying this process to ivory printing, and had carried out the operations we have described, and obtained a fine image, with which, as we examined it by yellow light, we were fully satisfied. But when we brought it into daylight we were sadly disappointed to find it quite yellow in the lights. The affinity between the ivory and the chromic acid was such that the former had acquired a brilliant yellow dye, which no amount of washing was sufficient to remove. A chloride of lime bath would probably remove this tint, but it would also restore the solubility of the compound of gelatine, pigment, and oxide of chromium which formed the image, and risk the partial or complete destruction of the picture, and hence we did not try it. On conferring with Mr. Johnson, he expressed a conviction that the colouration was due to the free chromic acid, and suggested that the addition to the water of a little ammonia, to neutralize the chromic acid as it was dissolved out of the tissue, would prevent the yellow colouration of the ivory. This we have tried with nearly complete success. On repeating the experiment with water containing about a couple of drachms of strong liquid ammonia to half a pint of water, we found the ivory very slightly indeed tinted with yellow, and after thorough washing the tint was scarcely perceptible. The presence of a yellow tint in any degree is, of course, very objectionable, but we have no doubt that by care, and the free use of ammonia, or possibly by sensitizing with a neutral double chromate of potash and ammonia in the first instance, all risk of colouration might be removed. On this point we shall probably have more to say shortly.

The second drawback is a simple one, and may be overcome. It consists in the fact that all single transferred carbon prints are reversed unless they have been printed from reversed negatives. If the negatives are produced with a special intention to the printing of the image on ivory, they may be taken through the glass, and so reversed in the camera; or, if not, they may be transferred for the purpose by any of the well-known methods. If neither reversed nor transferred negatives are available, a reversed ivory picture must result, or this process must be given up for the next to be described.

The second carbon process on ivory does not possess either of the drawbacks just named. Being a double transfer process, in which the print is developed and washed before being placed on its final resting place, the ivory is preserved from all contact with either bichromate or other chemicals, whilst, of necessity, the image is by the double operation placed in its proper non-reversed position on the prepared surface. In this case we have practically adopted Swan's process. A piece of tissue is sensitized in the ordinary way by floating on a bichromate solution, and exposed; it is then mounted upon paper by means of the india-rubber varnish, developed, washed, and dried. It is then coated with a warm, thin solution of gelatine, containing from ten to twenty grains of gelatine and four or five drops of glycerine in an ounce of water, carefully cleared and strained. It is better to allow this coating to dry. The prepared ivory should have a perfectly clean surface over which water will flow freely, without any trace of grease being present. If any greasy repulsion of the water be seen, the surface should be rubbed with alcohol and a little clean cotton wool to remove the grease. When it is ascertained that the surface is quite clean, the ivory is dipped into a solution of alum, and the print is immersed at the same time, and quickly, without allowing time for the latter to soak; the two surfaces are brought into contact, drained, and the print rubbed down well with the "squegee" or the palm of the hand. If the india-rubber varnished paper upon which the image was developed be thin and pliant, adhesion can be secured by rubbing down in this way alone; but we prefer to place the ivory with the transferred print between two pieces of elastic felt, and pass them through a rolling-press, which makes the adhesion perfect. It only remains, after the gelatine—by which the mounting or transfer is effected—is perfectly desiccated, to treat the india-rubber varnished paper at the back with india-rubber, and remove the paper. The print is then complete.

We have described the method of transfer to the ivory which we have found safe and certain; but, under some circumstances, a simpler plan can be pursued with advantage. The developed print, whilst still wet, may be applied to the ivory surface, and rubbed gently down; it will, if rightly managed, adhere perfectly without the further aid of gelatine. Two conditions are, however, necessary to success in this case: one is, that the image shall contain very little gelatine and be very slightly in relief; and the second, that the india-rubber treated paper be very thin, so as to permit the image, with its slightly varying degrees of relief, to be pressed gently into firm contact with the ivory surface.

There are a few general hints in relation to carbon prints on ivory which it will be well to bear in mind. It is scarcely necessary to say that since the photograph is always intended as the basis of a delicate and brilliant water-colour miniature, especial care must be taken against over-printing. A delicate, light, soft impression, with sufficiently well-marked detail to indicate the drawing, is required; blackness in the shadows and muddiness in the lights must be carefully avoided. Different artists prefer different tints for working upon; but none like pure black. A tender warm grey, or a delicate sepia tint, will generally suit the purpose of the colourist.

It is also desirable that a thin tissue with sufficient colour be employed. On paper it is unimportant if the amount of gelatine holding the colour be tolerably thick; but on ivory the least possible amount of gelatine to hold the colour is desirable, as anything like an appreciable thickness of gelatine, giving distinct ridges of relief in the shadows of the picture, is very undesirable.

Hitherto, so far as we know, the carbon process has been comparatively little employed in conjunction with ivory; although we understand that it has, in some cases, been employed with much satisfaction and success; the precise details of the operations in such cases are, however, unknown to us. The methods we have described we have ourselves worked out experimentally and with a fair mead of success; nevertheless, it is more than possible some slight modifications might be found desirable in extended practice, as, indeed, almost every operator finds in relation to most processes. We shall be glad to learn the results obtained by any of our readers working in this direction.

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THE ACTION OF PERMANGANATE ON THE NITRATE BATH.

The *Chemical News* recently gave an abstract of a paper in a foreign journal on the "Behaviour of Chlorine, Iodine, and Bromine towards a Solution of Permanganate of Potash," by M. Lindner, in which he states:—

"When, to any solution containing a compound of iodine a drop of a dilute solution of permanganate of potassa is added, the peculiarly characteristic colour of the latter substance is changed into brown; that is to say, that iodine is set free, and the permanganate reduced. It does not matter whether the original solution of the iodide has an acid or an alkaline reaction, for, in the former case, the fluid will be clear and transparent, in the latter turbid. A neutral solution of a bromide is not affected by the permanganate, neither is an alkaline solution; but if the solution of the bromide is acidified with nitric acid, the reaction, on addition of the permanganate, takes place in the same manner as for the iodide solution. A solution of a chloride is never, under any conditions, acted upon by the permanganate. The author states that, even when solutions of iodides or bromides are so dilute as hardly to be detected by nitrate of silver, the permanganate never fails to detect the presence of them, but does not, at the same time, distinguish between iodine and bromine, for which purpose the specially-distinguishing re-agents for these two halogens have to be applied."

With a view to test the results of this reaction on iodide of silver in the nitrate bath, Mr. Spiller undertook a series of experiments, which lead to the conclusion that on adding permanganate to a bath containing iodide, iodate of silver is formed. The characteristics of this silver salt have not been investigated; but, as an oxygen compound, it may be expected to check any tendency to fogging. Mr. Spiller favours us with the results as follows:—

"My Dear Sir,—I have been making some further experiments upon the chemical reactions involved in the attack of iodides by permanganate of potash, and hesitate in believing that iodine will be expelled from neutral solutions. The following experiment seems conclusive on this point.

The atomic weights of iodide of potassium and permanganate of potash being nearly identical, I weighed out equal quantities of the two salts, and studied their behaviour when brought into contact through the medium of water. The result was, that no iodine was liberated even upon warming the mixed solutions; much brown oxide of manganese was precipitated, but the iodine itself appears to pass into the form of iodate, and is then secured from further change until an acid is added, when the well-known reaction of iodic acid upon hydriodic acid occurs, and the element is eliminated with formation of water, thus:

$$IO_5 + 5HI = I_6 + 5HO.$$

If, however, the iodide of potassium is mixed with *twice its weight* of the permanganate without addition of acid, much caustic alkali is liberated, and the iodate of potash formed according to the following reaction:—

$$2\,(KO, Mn_2O_7) + KI = KO, IO_5 + 2KO + 4\,MnO_2$$

"In order to simplify the expression of this change, I have intentionally omitted from the formula the water which would be required for the hydration of the potash. The result is conclusive as to the production of iodate, for I have added nitrate of silver and nitric acid to the solution after filtering off the binoxide of manganese, and obtained a white precipitate of iodate of silver which is *freely* soluble in ammonia. I conceive that this chemical reaction may be taken advantage of in the event of its being desired to prepare iodate of silver, for the purpose of studying its effects upon the bath. Taking two parts by weight of the re-crystallized permanganate, and adding gradually one part (or thereabouts) of iodide of potassium until the red colour of the solution is discharged, filtering the solution, then adding nitrate of silver and nitric acid in slight excess, gives the pure iodate, which may be easily washed with hot water by decantation.—I am, sir, yours faithfully,

"*August* 2*nd*, 1869. John Spiller."

Critical Notices.

PHOTO-CRAYON PORTRAITS. By Sarony and Co., Scarborough.

The time-worn adage, "practice makes perfect," is admirably illustrated in the photo-crayon portraits now produced by Messrs. Sarony and Co. Fine as were the early specimens we saw, they are far transcended by later results, and amongst the examples now before us there are some of the most charmingly perfect and picturesque effects we have ever seen in photographic portraiture. One picture especially pleases us. It is that of a lady, the face in profile. A black lace mantilla mingles with the head-dress, and descends on to the shoulders in graceful, negligent folds. The modelling of the face is marvellously perfect, so full of delicacy, yet so round and vigorous. The tone—and it is in the technical excellences of this kind that the progress is most apparent—is singularly pleasing, and of a quality we have not hitherto seen produced in transparent positives on glass: it is of a very deep, rich, sepia tint, approaching a warm purple-black in the darkest shadows, the warmth and transparency giving great value to the picture. Some other examples are of an intense but slightly warm black, altogether removed from the cold black inclining to grey commonly seen in glass transparencies.

As we examine these specimens, we are struck with the fallacy of one of the objections which have been urged against the photo-crayon. It was intimated by a gentleman at a recent meeting that an incongruity existed between the delicate continuous gradation of the photograph and the mechanical gradation of hatched chalk vignetting. On a hasty theoretical consideration of the matter, this argument appears to possess some weight; but we are satisfied that such an objection could not result from a careful examination of a few good specimens of the work. Even without such examination, the objection might easily be answered by citing art precedents. In the mixed style of engraving now prevalent, it is customary to secure in faces and other important parts of a picture the finest gradation it is possible to produce by mezzotint or stipple treatment, obtaining an effect akin to continuous gradation; whilst the draperies and other less important parts are treated broadly with bold, rough gradations. It is not uncommon in some styles of water-colour portraiture to lavish the utmost skill and care in securing soft and delicate gradations in the flesh, whilst the drapery is managed sketchily, not unfrequently in crayons. In pastel-painting it is customary to secure the nearest possible approach to continuous gradation by blending the crayon tints with the stump, whilst the draperies and vignette effects are secured by means of the boldest hatching. But, putting these precedents aside, the fact is, the incongruity in question need never be apparent, and in good examples of photo-crayon work practically ceases to exist, as may be seen on examination, and as we can make apparent by explanation. In a good photo-crayon transparency there are no crude masses of black shadow rendered by dense opaque deposit; all parts of the image are in their degree transparent. If they were laid on a piece of paper on which a chequered or a diaper pattern had been printed, they would show this pattern throughout: it would be quite apparent in the lights, and more or less so through all the gradations of half-tone and shadow. If they were laid on canvas they would produce the effect of delicate paintings on canvas; and when they are laid on crayon paper they resemble drawings on crayon paper. The white paper forms as essential a part of the picture as the dark photographic deposit on the glass, and whatever the character of the white surface, the picture must partake of that character. If it have a smooth surface, which can be pressed up to secure continuous contact with the image on the glass, it will secure the effect of the ordinary photographic continuous gradation; but if the surface of the paper be rough and granulated, it can only have a broken and irregular contact with the image on the glass, and the gradation throughout will have the character, in greater or less degree, of the broken gradation of a chalk drawing on crayon paper. This will be the case before any chalk touches or hatching of any kind are added; hence, when the hatched vignetting is added, there is no such incongruity as that which has been suggested. The result rather resembles, throughout, a very fine and highly finished crayon portrait, of photographic truthfulness, delicately and softly worked in the face, boldly and sketchily finished in the background; and this effect is so perfectly of the character we have indicated, that it utterly deceives artists when the finished result is placed before them without explanation of the means. "This is not photography; it is the work of a very skilful artist," exclaimed an ivory miniature painter and accomplished art student, to whom we showed some examples. The truth is, there is no incongruity of effect whatever, but a degree of delicacy and finish not to be attained by any other photographic process that we know of, even by expenditure of ten times the skill and labour. The more we examine good specimens, the better we are satisfied with their many beauties, and the more satisfied we are that they will please the public and pay the photographer.

PHOTOGRAPHIE AU CHARBON. Par M. Leon Vidal. (Paris: Lieber, Rue de Seine.)

This is a valuable *resume* of the various carbon processes, carefully compiled by Monsieur Vidal, the able Secretary of the Marseilles Photographic Society. In many instances the author has done us the honour to make use of our work on Printing in Pigments, in all instances with full and complimentary acknowledgment.

THE SILVER SUNBEAM: A Practical and Theoretical Text-Book on Sun Drawing and Sun Printing. By J. Towler, M.D. Sixth Edition. (New York: Joseph H. Ladd; London: Trubner and Co.)

We have before so fully expressed our very high opinion of the value and excellence of Professor Towler's photographic text-book, that we need here only chronicle the advent of a sixth edition, which contains several extra chapters, chiefly devoted to novelties or important points not found in previous editions.

MAWSON AND SWAN'S BOOK OF CHEMICAL LABELS. (Newcastle-on-Tyne: Mawson and Swan.)

The utility of a series of plainly-printed and ready-gummed labels does not require enforcing. Mawson and Swan have here provided a very complete set of labels, suitable for the purposes of the photographer as well as the chemist. The new chemical nomenclature is adopted, but is also duplicated on the same label with the old form, for the convenience of those who have not yet rendered themselves familiar with the new terminology.

MORE LIGHT: A Dream in Science. (London: Wyman and Sons.)

A RHAPSODY by an amiable and intelligent enthusiast, who gives his conjectures of the cosmic system as the revelations of a dream.

THE GOLDEN SYRUP SOLUTION FOR WET PLATES.

BY H. P. ROBINSON.

I SUPPOSE that some failures must inevitably follow the advent of any new process or new operation proposed to photographers, however simple and certain it may appear. I suppose, also, the originator of any mode of working does not of necessity meet with the difficulties which beset a certain percentage of those who, even with the utmost honesty and apparent care, follow his instructions. Certain it is that in trying the preservative for wet plates your correspondents "Try Again" and "P. M." have succeeded in meeting with that which I have sought for in vain ever since I made the first experiment—failure. I have used the process extensively this summer on sixteen by thirteen plates, both in this neighbourhood and at a distance from home; I have employed the commonest treacle as well as the best golden syrup; I have kept the plates between developing and finishing three days; I have poured the syrup on the plate immediately after, and also a long time after, the developer has been applied; and, because I want to find any failures there may be in the process, I meet with what (in an experimental sense) might be called the most annoying success: the plates never have any fault that can be charged to the syrup.

I have never dreamed, however, of pouring the syrup on the middle of the plate, as "P. M." has evidently done, or I should probably have met with the same marks and stains. In one instance I have heard of the deposit mentioned by "Try Again," and which seriously damaged some negatives. In my own practice I always found this deposit, when it occurred, wash off. However, in the still simpler mode of working I now employ, this deposit never appears. The deposit only occurs when the negative is intensified *before* the syrup is applied. I now find it much better in all respects to intensify at home, and therefore after the application of the syrup.

"Try Again" will find that the stains he sees when he applies the syrup are only apparent; this apparent darkening of the film in ridges is simply the effect of different thicknesses of the syrup, as it runs on rather greasily at first. Even now, after much practice, I can scarcely persuade myself that the film is not stained at times as I apply the syrup; but the negatives always come out quite clean after the subsequent washing.

Perhaps a re-statement of the process may be of use to some readers of the NEWS, especially as the method I now use is much simpler, with less chance of failure than as first proposed.

The only chemicals necessary to take into the field are: the silver bath, collodion, iron developer, and syrup. Of the three first I need say nothing; every photographer knows how to make a negative bath, whether he uses nitrate of silver hermetically sealed in glass tubes, at a high price, strongly recommended to tyros, or the quite as efficient, and, probably, the same, silver at three shillings and fivepence, commonly employed by more experienced hands. All commercial collodions are now so good that it is difficult to buy a bad sample; the most important thing to see to now all are so good is, that it has attained the right degree of *ripeness*. The iron developer I use is from fifteen to twenty grains, without organic matter or other restrainer than acetic acid. The syrup is made as follows:—

Golden syrup	10 ounces
Water	10 „
Alcohol	6 drachms.

A plate is prepared, exposed, and developed in the usual way. When the image is fully out, the developer should be poured off, and the syrup poured on, after which the plate must be put away in a light-tight box. Tin or zinc boxes are best when the plates have to be kept a long time. I have kept preserved plates in a wooden box for three days without any detriment. I have no doubt they would keep much longer.

It will be observed that I recommend the negative to be developed only, not intensified; that operation had better be performed at home.

There can be no doubt that a negative exposed for exactly the right time will yield better results than one over or under-exposed; but with the preservative, as with water, there is some latitude of exposure allowable. When the wet process is conducted in the usual way, if the plate is under-exposed, a prolonged application of the developer will often bring out sufficient detail; when it is over-exposed, the developer is washed off quickly. So with this process, if the exposure has been too long, a quick and skilful application of the syrup will save the plate. It is a curious property of golden syrup (on which this process partly depends) to immediately arrest development. It does this so surely that if there was the least particle of the film without any deposit when the syrup was applied, it would most certainly remain bare glass, however much the negative may be afterwards re-developed or intensified. It is impossible to fog it.

From the few failures I have heard of, there appears to be some little difficulty in applying the syrup. It should be poured over the film in a freely flowing wave, covering the plate all over as quickly as possible, just as the developer is applied. If the alcohol in the syrup does not exactly balance the alcohol in the bath, the syrup will not at first take to the surface of the film, but will present a slightly greasy appearance. This is of no consequence at all, but the syrup must be worked over the plate for a short time until it runs evenly. It should then be poured off, and the plate boxed. In my practice, I have taken no care to prevent streaks and stains, and have never seen any, even in the most delicate sky and sea negatives; but I would recommend a beginner to take all the care possible.

The negatives may be intensified and fixed at home at any convenient opportunity within a few days of their being taken.

To intensify, wash the plate thoroughly under a tap (the longer it has been kept, the more washing it will require); pour the intensifier, either pyro or iron, over the plate and back again into the measure; now add a few drops of nitrate of silver solution, and carry the intensification to the requisite degree. It will be found that this takes place quicker than in the ordinary method, and that any degree of intensity can be obtained with the greatest ease. Wash, and fix with hypo.

I have entered minutely into the details of this very simple process, because I have a great objection to suggesting anything that may mislead others; and it is almost as easy to mislead by a partial statement of a process as by a misstatement. I hope "Try Again" and "P. M." will really try again, and, if they carefully follow the above instructions, I feel sure they will succeed.

Tunbridge Wells, August 7th, 1869.

MASKS AND FACES.

BY PROTAGORAS.

PART VI.—OPERATORS SHOULD HAVE "NOUS" ABOUT THEM.

WHEN writing so often about "operators," I wish to be understood as not merely meaning the lower class of men who assist in photographic portrait establishments; men who, too frequently, have no other interest in what they do than earning daily bread and cheese; men who scarcely have even a glimpse of appreciation of the beautiful principles of Science and Art they assist in developing. These men are useful enough in their humble way; though we cannot do without them, they are but photographic labourers, mere hewers of wood and drawers of water, so to speak. They relieve the higher skilled persons by doing drudgery; they clean glasses, wash and dry prints, and may even coat plates and varnish negatives. It is not this class of individuals I dignify by the name of "operators." If I knew a better term I would use it. By it I mean the men who stand at the camera and take the negatives; the men who perform the high office of applying photography to one of its most valuable uses, that of registering, in its own inimitable way, the human face and form. I wish these skilled individuals to be more worthy their high vocation. It is not to the purpose, as I have said before, whether they are the proprietors or not, it is to their *duty* I devote my observations. In addition to their taking good photographs and posing well, I have insisted that they ought to add the knowledge of rapidly appreciating natural character, so as to make their work of more value.

I have still more to insist on: operators must have *Nous* about them. Well, what is "Nous?" "Nous" is not an elegant word, but it is expressive, and, though slangy, has the merit of being very well understood. "Nous" is not knowledge, skill, or ability. A man may have all these, but, wanting "Nous," he will profit little by their possession. "Nous" is capacity to use these in the proper manner and at the right moment; "Nous" is the quick appreciation of what is required to be done; "Nous" is judgment, shrewdness, mother-wit, common sense. It is all these concentrated—brought to a focus—with a view to immediate action.

There is a great deal of work done in the world to which ample time can be given for thought and reflection as to how it can best be accomplished. There are other kinds that have to be done on the moment, where the quick eye and ready hand have to take action at once; and few occupations are more tested in this particular than an operator's when in the full tide of business. Hence he must have "Nous" about him.

I scarcely know in what part of his duty it is most needed, seeing it is required everywhere. The operator with "Nous" is always at his work in good time in the morning, to see that all things are prepared for the day's wants. "Nous" keeps his windows cleaned, his camera dusted, his bath filtered, his collodion in right order (neither too old nor too new.) "Nous" sees that he has clean glasses ready, and plenty of developer mixed. "Nous" keeps the inside of his dark slide well varnished, so that the silver solution shall not stain his plates. "Nous" always has a new bath ready in case the old one breaks down. "Nous" rarely doctors his bath—in fact, he does not believe in doctoring. "Nous's" motto is, "It is better to make a new bath than risk failure by pottering with an old one." "Nous" has everything ready before his sitters enter the glass room, and has a pleasant word for them all. He is facetious with the lively, quiet with the serious, and confident with all. "Nous" seldom loses his temper, rarely keeps his customers waiting, and never quarrels with them, even when they make ridiculous requests. "Nous" values the time of his patrons, and they return the compliment by not wasting his. When "Nous" has to give a "resit," he does it with a good grace, and makes the best of it. "Nous" is not above humouring the whims and fancies of his sitters, so far as he can without compromising himself or producing a bad photograph. "Nous" thinks there is wisdom in the old maxim, "It is better to fiddle a fool than fight him." Although "Nous" is often as sick, as tired, and as ill as other people, yet, knowing the sympathy between his sitters and himself, he wears a pleasant face when at his work, and his sitters are pleasant accordingly, and give good expressions.

There is another description of operator who differs considerably from "Nous." I shall call him, for the want of a better word, "Moony." Everyone of experience must know the two types. Unfortunately, the examples of the "Moony" order are the most frequent. I distinguish between "Moony" and "Muff." "Muff" belongs to a much lower grade. If "Muff" were not so often met with, I should ignore him altogether. "Muff" is an unmitigated and abominable nuisance. I think the old-fashioned punishment should be revived in relation to him: he should be hung, drawn, and quartered. I am not certain about the quartering; I think he should have no quarter. If he have any quarters at all, they should not be in a photographic studio. Artemus Ward once met with one of this genus, and he told him if he (Artemus) were his father, he would order his son's funeral the next day, *and the corpse should be ready*. I wish the fathers of all Muffs—especially photographic ones—had an equally shrewd idea of the usefulness of cemeteries. I suppose there is a providential use for "Muffs" and sloths and such varmint, but it passes my understanding. I think all "Muffs" should be subject to capital punishment, and capital punishment it would be.

However, "Muff" is not my theme, so I shall dismiss him. It is about "Moony" I have to speak. "Moony" is better than "Muff," but still even he is a considerable nuisance. Give "Moony" time enough, and, in his own way, he can get through his work. What I grumble at "Moony" for is, that he is not sharp and quick. "Moony" *thinks*, when he should *act*. I may be wrong there; I do not consider "Moony" ever really thinks. He only thinks he thinks. That confused mental muddle he indulges in is not worth the name of thinking. "Moony" poses his sitter, and then remembers he has no plate prepared. "Moony" allows the sitter to remain with his head in the head-rest while he gets the plate ready. "Moony" carefully takes the cap off the lens and makes the exposure, previously, however, forgetting to draw up the dark shutter. "Moony" scrupulously takes the focus, but, just before uncovering the lens, he kicks the camera-stand. If he does not knock it over, he at least must re-arrange and re-focus. If "Moony" goes out to take a view, he is sure to forget something. It may be only the dipper, the inner frame of the dark slide, or the diaphragms; but one time I knew him forget the lens, and another time the nitrate bath. If "Moony" has many plates to develop, he generally runs short of developing solution, and only discovers it when, plate in hand, he is ready to bring out the image. "Moony" never has a stock of clean plates ready, and often has to rub out old negatives while the sitter is waiting. "Moony" has also a bad habit of allowing the head-rest to be seen in his negatives. Sometimes it shows as a black lump growing out of the back of the neck; oftentimes it makes a well-shaped foot look a club foot. He will also let it be seen between the legs of a gentleman standing, as if to clinch the joke of the sitter having a poker up his back, and *this* the bottom end of it. But "Moony" is so clever in dodging and "touching out" in the negative, or on the print, that such a trifle he takes no note of.

"Moony" has one advantage over "Nous": "Moony" is clever at "dodges." This knowledge is, however, of more use to "Moony" than it would be to "Nous." If a negative is too hard or too weak, over-exposed or under-exposed. "Moony" knows how to manage it, either in the intensifying or the printing. "Moony" beats "Nous" there. Somehow "Nous" seldom needs this knowledge. His negatives generally give good prints without any great trouble being taken with them. It is quite a sight to see how "Moony" will work on an over-exposed plate, for example: he will pour over bichloride of mercury, then iodide of potassium, then ammonia or hypo. If not intense enough, he will begin again with pyro and silver and bichloride, and so on until he thinks he has it perfect. He will so intensify one part and weaken another, that sometimes the negative is nearly as good as if it had been properly exposed in the first instance. It is fortunate that "Moony" is able to so manage and dodge his negatives—they so frequently require it. Somehow "Moony" is apt to forget himself during exposure, and rarely hits just the proper number of seconds required. Thus he has frequent need of correcting the error in the exposure.

"Nous" acts differently. Prior to exposure, he observes the light, and estimates its quality at the moment; he also observes the sitter's complexion, and the colour and texture of the dress. "Nous" also remembers whether there is a diaphragm in the lens, or open aperture. With all these things vividly present in his mind, "Nous" generally makes a safe approach to the right exposure. Occasionally, however, he fails, and his negative has too much or too little exposure. Under such conditions "Moony" would stop to ponder and consider how he could rectify the error in the negative; but "Nous," having no such dodging ability, simply rests content by taking the negative once again. It is as well to note, however, that before "Moony" has quite settled what he shall do, "Nous" has taken another negative with the correct exposure. The difference in the practice of the two quite accounts for "Nous" not being up to the dodges—seeing he rarely requires them—and "Moony" being so proficient in them.

"Moony" is generally very learned in the theory of the art and science, and can talk about the practice. Somehow you are generally disappointed when you see his work. I do not believe in "Moony" much. "Nous" does not talk theory, but he generally understands it to a sufficiently serviceable end. "Nous's" strength is in sound practice.

"Moony" frequently gives himself airs and importance, and when you find a good example—there are a few such—people are apt to have faith in him. "Moony" is perfectly convinced of his own consequence; the amount of learning and knowledge he carries about with him are such that he thinks it is only common justice that he should assert himself. "Nous" is not nearly so showy a personage. "Nous" does not care so much about himself; it is for his work that he is anxious. So that he gets that well done, he is satisfied. It would be an amusing thing to watch "Nous" and "Moony" through a whole day, and to observe the greater quantity of work done by "Nous," the superior quality of the same, and, finally, to note the ease to himself and the pleasure given to his sitters by his ready possession and quick application of that something-or-the-other we call "Nous."

Instead of observing them a whole day, let us notice the difference between their behaviour in taking a young child's portrait. "Moony" tells the child to be quiet—"only for a minute,"—and gravely looks as if he really expected the child would heed what he says. The child moves and wriggles about. "Moony" again tells it to be still and be a "good little thing"; child wriggles off chair, and toddles to nurse or mama. "Moony" puts child back again, and implores it to be "quite still." Child wriggles again, and is soon on the floor. Child put back. "Moony" begs it to be "quite quiet this time," and before it gets off chair again he snatches the cap off the lens, and hastily puts it back, child vivacious all the time. "Moony" develops the plate, and child has as many heads in the negative as a Welsh giant, as many eyes as Argus, and hands as numerous as Briareus. "Moony" tries again; child wriggles again; nothing but a huge blotch represents child. "Moony," at it again, gets excited, child gets more excited, and the blotch on negative is still more confused. "Moony" gets desperate, child gets tired; "Moony" insists, child yells; "Moony" implores, child roars; "Moony" gives it up for a bad job, and child gladly rushes to loving arms—to come again another day. "Moony" loses his temper—half a dozen plates, two customers who couldn't wait any longer, and an hour of the best part of a fine day.

"Nous" manages differently. He gets everything ready before child is put in position, takes a focus on the chair before child is put in it, and before child is tired he has it taken. "Nous" screams, capers, halloas, claps his hands, beats a drum, rings a bell, whistles, turns a summerset if necessary—anything to catch child's attention; and so child is taken. "Moony" is solemn, dignified, and would be ashamed to be seen being ridiculous—making antics. What does "Nous" care? he had his picture to get, and he got it. One plate, two plates, three plates, all more or less good; none, perhaps, *quite* still; none, perhaps, *quite* in focus; none, perhaps, the best expression; but, on the whole, a successful result. Child laughs in one, is astonished in another, looks rather frightened in a third; altogether forming an interesting variety. Mother kisses child for being "so good," and compliments "Nous" on being *so* successful.—"Presto! Quick! It's all over. Call in the next sitter."—So much for "Nous." Bravo, "Nous!"

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 3.—The Silver Bath.

The failures and defects occasioned by those capricious agencies to which photography is peculiarly subject, are often so strangely alike in appearance, that the most experienced eye is frequently at fault when it seeks to trace causes. Troublesome, however, as the management of the chemical branch of photographic practice undoubtedly is, it must be admitted that no art that is similarly dependent on chemistry admits of a broader scope in the construction of the formulæ on which its operations are based. The negative bath and developing solutions afford proof that their ingredients are proportioned by the rule of fancy. Yet the wide range of quantity observable in the several published formulæ does not fail of enabling the master hands of photography to secure the best results with their adoption; but the quantitative variations practised by operators stand as insignificant when compared with the breadth of licence taken by the photographic printer, whose formulæ run wild into senseless extremes. His silver solution, his toning bath—in fact, all his chemical solutions—appear to be mixed by the rule of thumb; yet proofs are not scant to show that, with most of the published recipes, good results have been obtained. This fact, however, does not prove the inexactness of photography as a science, but it is a most convincing proof of ignorance occasioning waste; and whilst the difficulty exists which renders it impossible to draw a line between needless consumption and impolitic economy, the waste of material must and will continue.

It has been frequently and most reasonably urged, as an excuse for the shortcomings that arise from lack of knowledge, that photographic practice is far in advance of accurately drawn theory. That such is, indeed, a fact, our everyday experience shows, for even in so simple a matter as sensitizing a sheet of paper we are brought to a dead stand if we would speculate on the chemical changes wrought by the silver bath. Certainly the subject admits of explanation sufficiently broad to meet practical requirements; but a mind that is attuned to the niceties of scientific research cannot stop at practical generalization; it must, perforce, move on to enquire whether the albuminate of silver stands as a compound distinct from the chloride of silver with which it is in some way associated, or whether a true treble chemical combination to a certain extent exists.

It is, however, one thing to start a problem, but it does not follow that a solution of the question can be incontrovertibly reached; and if it were possible to find a correct reply to the matter I have hinted at, the practical advantage gained would, perhaps, scarce repay the trouble. My own opinion is, that the combination is a mechanical, not a chemical one. Certainly my conclusions are negatived by the appearance of a dried film of albumen, with which a chloride salt is known to be associated, but which affords no evidence of its presence in the transparent film. It must, however, be observed, in reference to this apparent anomaly, that the albumen was the solvent that reduced the salt to the extreme of atomic divisibility. When a crystallizable substance is dissolved in water, the atoms are kept separate until, by the evaporation of the liquid, they are brought within cohesive influence, and the crystals formed once more reappear in a solid state. The conditions are widely different in the case of albumen being employed as a solvent, because evaporation of its water only renders more glutinous the albumen, and each atom of salt is so surrounded by an envelope of varnish that the force of cohesion cannot follow its natural course; therefore the atoms of salt, in a state too minute to admit of their being seen, are combined with the albumen, whose transparency is not marred by its associates.

In dwelling further on this topic we have no step between the argument I have advanced and the proofs to be found in the behaviour of a film of sensitized chloro-albumen when it is exposed to light. Now it appears to me that if the admixture of silver, chlorine, and albumen forms a definite chemical compound, some proof of this would be produced by their behaviour when undergoing the process of reduction by light; but, after much experimenting and thinking over the matter, I am bound to admit that the arguments so provided, *pro* or *con*, are very scant indeed. Still it seems to me that the balance of proof rests on the side of a mechanical association, rather than in the direction of chemical combination. If a chemical union exists, why should the nature of the light modify results in such a marked degree? Salt the albumen high or low, when the sensitive film is exposed to a diffused light, the characteristic reduction which distinguish the sub-chloride of silver is, for a considerable time, apparent before the red reduced albuminate of silver becomes visible; whilst, on the other hand, expose the film to a bright sunlight, and the organic salt reduces, to the exclusion of the chloride, which appears to be buried beneath the coloured outer surface of the film. Hence we have a reason why that, with a thin negative, sun printing should be avoided.

Again, we have to notice the results which follow various lengths of time allowed in floating an albumen film on the silver bath. Appearances go to prove that an albuminate of silver is formed before the chloride salt is acted upon. Yet, if we give a very brief floating, we are rewarded with pictures flat and useless; similar, in fact, to prints produced with an albumen film to which no salt has been added. Therefore, taking the arguments as we can get at them, the balance of proof, as I before observed, is in favour of a mechanical association of albumen-chloride of silver and a plus of free nitrate.

I need not, however, pursue this topic further *here*. I merely open the question in order that an opportunity might be afforded to those who may wish the matter to be further ventilated in the columns devoted to correspondence, where I shall have much pleasure in meeting them. At present, a practical dealing with the silver bath must occupy the remainder of this chapter.

1st. Concerning the strength requisite for a reliable printing bath. I am of opinion that when the silver is unassisted by an adjunct—such as nitrate of potash, soda, &c.—the quantity of silver should not be under forty grains.

"Oh!" exclaims experience No. 1; "why, I am obliged to use a bath of at least sixty grains. I tried your forty-grain bath, and, I must say, got a few good prints, but the bulk of a large batch of prints turned up worthless."

"How many sheets of paper did you float on *that* day?" I enquire.

"About twenty or thirty," is the reply.

"And did it not occur to your non-observant mind that your forty-grain solution stood at that strength no longer when the first sheet had been floated?" I observe.

This is a subject usually overlooked by those who attempt printing with weak silver baths. Operations are commenced with the silver solution standing at the extreme minimum of strength admissible. Sheet after sheet is floated (and the average amount of silver removed by each sheet may be roughly computed at twenty grains); yet failures so brought about are made sources of much wonderment and fruitless conjecture. I say emphatically, in reference to this matter, a penny saved means a shilling lost. To starve a silver bath is as great an error in the observance of economy as can well be conceived of. If silver saving is desired, why not have recourse to nitrate of soda?

"I have done so," chimes in experience No. 2; "but, after doing well for a time, it suddenly struck work, and my prints from bad went on to worse, until it came a case of ruined batches, dirty silver bath, actual and serious losses. So I gave up soda nitrate in disgust, and returned to my first love, silver, pure and simple."

"Why did you omit adding silver to your soda bath to prevent the evils you now lament over?" I ask.

"Couldn't see that it wanted any. I tested the solution with the argentometer, and it stood at sixty: surely that was silver enough."

The error exposed by this explanation is one but too common among photographers, who, on account of ignorance, have cursed and relinquished the use of nitrate of soda. True, "intelligence has condemned its use;" but intelligence is not unfrequently very ignorant; and ere I conclude this chapter I shall probably prove it so in its condemnation of a valuable agent.

To avoid digression, I must devote attention to the erroneous ideas sometimes entertained concerning the argentometer. It is by many persons supposed that the little instrument named is capable of registering the presence of silver only. I would have it henceforth understood by every reader of the News that an argentometer is a mechanical, not a chemical, test. Its zero would stand in a line with plain water; and it will at once be recognized that if the water is made heavier by dissolving silver or any other substance therein, the glass would become more buoyant and rise. It is on account of the salt and other substances contained in sea-water that the ocean water is heavier than the fresh river water. A swimmer experiences less difficulty when swimming in the former than in the latter.

If silver only was used to increase the specific gravity of the water, an argentometer would answer all practical purposes when used to test the amount of silver per ounce present in the bath; but as soda, sugar, and any of the adjuncts employed increase the weight of the fluid, it stands to reason that when either of those substances are used, the argentometer test is a useless one.

(To be continued.)

OBSERVATIONS ON THE EMPLOYMENT OF BATHS OF VARNISHED WOOD.

BY M. CLOUZARD.[*]

The first wooden dish of which I made use was a failure, the varnish and glue with which I had coated it being removed by the action of the silver bath, even at a cold temperature. I had used considerable care in its construction, especially in the application of the varnish, but by degrees the moisture penetrated the varnish, attacked the glue, and dissolved the latter away. Being thus convinced of the unsuitability of glue, I devised a mixture which should be more appropriate, consisting of one part of marine glue, and four parts of shellac sparingly dissolved in wood spirit. Besides adopting this mixture, I also took the precaution of fastening the wooden vessel with copper nails instead of iron ones, the latter being more liable to be acted upon than the former.

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[*] Read before the French Photographic Society.

To make the vessel more solid, to prevent the liquid from filtering through the crevices, and also to render the bath more convenient to clean out, I fastened, by means of the same compound, triangular laths in all the angles wherever two pieces of wood joined, thus imparting the vessel with perfectly water-tight qualities. To be able to apply a thicker coating of varnish over the glue mixture, I first attached on the inside, by means of varnish, a sheet of thick filter-paper, and afterwards impregnated the latter with the same material, so that I possessed a layer of varnish of the same thickness as the paper. There would appear but little doubt that a coating of this description would preserve the wood from all attacks of moisture; at the same time a like object might possibly be attained by impregnating the wood with gutta-percha, india-rubber, or paraffin. These substances are not more impermeable than varnish, but they would better resist the action of the reagents employed in photography, for cyanide of potassium, as likewise ammonia, readily dissolve the varnish coating.

ON WASHING DRY PLATES IN ZINC BOXES.

BY M. BLANC.*

I have endeavoured, in reference to the perfect washing of dry plates, to take advantage of the property possessed by zinc to decompose solutions of nitrate of silver. With this object, I caused to be constructed a zinc box with five water-tight compartments, forming a series of five vertical dipping baths, and it is in this apparatus that I have, during the past three years, prepared my dry plates.

I fill the first of these compartments with rain water, and the remainder with ordinary water, and, by passing the plates successively from one bath to another, am enabled to wash them in a very complete and rapid manner. The only precaution that need be taken is, that of rinsing the plate in the first instance with a little rain water on its exit from the sensitizing bath. This preliminary operation is, however, by no means absolutely necessary, for I have, when possessed of but a scanty stock of pure water, repeatedly omitted the same without any injury resulting to the plates.

The vessel is furnished with a suitable cover, which allows of the operator passing in and out of his dark room whenever he is desirous of doing so. It occupies but a small space, its employment is very economical, and its original cost for glasses of half-plate size amounted to but five francs, ten plates being capable of accommodation at one time, if two are placed back to back, in each compartment. The dimensions of my half-plate apparatus is as follows:—

Height	... ...	20 centimetres
Length	... ...	30 ,,
Width	... ...	15 ,,

It would be difficult, I think, to suggest any other form of apparatus of such limited dimensions capable of holding five plates at one time.

In reference to M. Blanc's apparatus, M. Davanne stated that the decomposing action of the zinc sets at liberty an extremely fine precipitate of metallic silver, which becomes deposited on the sides of the vessel, and the deposition of which upon the collodion film should be carefully avoided.

GLASS POSITIVES FOR THE MAGIC LANTERN.

BY JOHN C. BROWNE.†

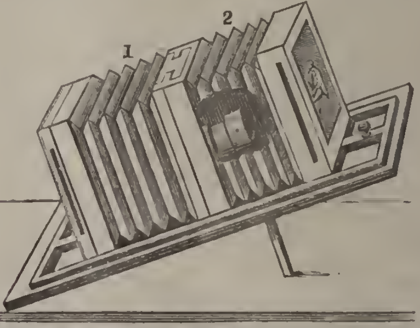
Among the many uses to which photography is applied, the manufacture of glass positives for the magic lantern is one of the most important as well as interesting.

The ordinary painted pictures exhibited years ago answered well to amuse children, but something better was wanted to satisfy older persons. Photography came to the rescue, and has now almost entirely superseded the rude hand-made drawings which delighted our youthful days.

The process of making glass positives is not a difficult operation, but little apparatus is required, and does not necessitate any very important change of chemicals, so that every photographer can make positives from his own negatives. This offers a branch of photography but little practised, and of very great interest. The cost of a magic lantern is not large, and the satisfaction of exhibiting glass pictures of home manufacture fully compensates for the expenditure of time and money.

In an article on "Glass Positives," published in the *Philadelphia Photographer*, vol. iv., page 9, I described my plan of operations, giving decided preference to the wet process. Since that time several years' more experience have been gained, and I see no reason, at the present time, to change my ideas then expressed on that subject, but will now give the entire process more in detail.

For convenience in preparing glass positives it is advisable to have two cameras placed front to front, or one regular camera-box, with an extension attached to the front, having a rack adjustment, so that the exact size of picture can be readily made. My apparatus is arranged in the following manner:—A camera-box, eight by ten, having the usual movable front for the attachment of lenses, is used for exposing the plate. I shall mention it as No. 1. On the edge of the front, extending up and down on both sides, are screwed strips of wood of the form of the letter L, into which the extension or second camera-box slides. No. 2, which has a flange upon its front edges, corresponding to the grooved portion in No. 1. when placed together a perfectly rigid light-tight joint is made. This does not prevent No. 1 from being used for other purposes when not in position for making positives. Box No. 2 has a large opening in the front or part joining No. 1; the upper end, instead of having a ground glass, has also an opening made to fit either a 4-4, 8½, or half-size negative, with a dark slide, similar to the slide of a plate-holder, immediately behind the negative. This box has a bellows and rack adjustment, similar to No. 1, which is a copying camera. The proper length of focus for each box will depend upon the focus of the lens used, also upon the size of picture desired; thirty-five inches will be found sufficient for general work, although a much shorter focus will do perfectly well if small negatives alone are used. To place the boxes in proper order, unfasten the front of No. 1, having the lens screwed to it, and slide the two boxes together, front to front; draw out the slide of No. 2, and place the lens in its position in the front of No. 1; put the negative in the opening made to fit it at the upper part of No. 2, collodion side towards the lens. It is best to have a frame of exact size made to receive the negative, secured by two buttons touching the corners of the plate, so that it may be kept in proper position. Incline the boxes so that the line of vision will strike the sky or any white object. I much prefer the sky, and fasten the boxes upon a copying-board seven feet long, one end of which is raised so that the negative is clean of the line of houses or trees, which can be easily ascer-



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* Read before the French Photographic Society.

† *Philadelphia Photographer.*

tained by looking through the ground glass of No. 1. If possible, use a north light, and do not let the sun strike the negative.

By lowering the top sash of a window, and placing the upper part of the arrangement containing the negative on the sash, the lower part resting upon a table or chair, a very convenient position can be obtained.

The lens used in copying the negative is never capped; the exposure is given by drawing the slide of No. 2.

To make a picture, first draw the slide of No. 2, and focus very carefully upon the ground glass of No. 1, using the rack-work of each box to obtain the proper size of picture; then close the slide of No. 2, which covers the lens; prepare the plate in the dark room as usual, put it in the holder, and place in position occupied by the ground glass; draw out the slide of the holder, and expose the plate, removing the slide of No. 2. After sufficient exposure, close slide No. 2, and then the holder; remove to the dark room and develop. These are general directions, but each part of the process will be given in detail.

The oft-repeated maxim, "Clean your plates well," must be strictly observed in the commencement of operations, otherwise the production of clean, transparent positives will be impossible. Although a change of chemicals is not absolutely necessary, I think that some failures may be prevented by giving my exact formulæ:—

Collodion.

Alcohol	5	ounces
Ether	3	,,
Iodide of ammonium	5	grains
Bromide of magnesium	2¼	,,
Cotton	4 to 5	,,

Before using, filter several times through cotton soaked in alcohol. It is a good plan to keep a supply of plain, unexcited collodion always on hand as a stock bottle, also a bottle of exciting solution, made in the proportion of five grains of iodide of ammonium and two and a quarter grains of bromide of magnesium to the drachm of alcohol. By adding one drachm of salted solution to one ounce of plain collodion it will be excited to the proper condition.

(*To be continued.*)

Correspondence.

PHYSIOGNOMY IN THE STUDIO.

Sir,—I have been much interested in reading the remarks, full of genial wisdom, made by "Protagoras" on "Physiognomy in the Studio," from which I hope I have gained some good suggestions. I have also been interested and amused as well by reading the comments of Mr. Bovey on the suggestions of "Protagoras." Mr. Bovey, I am sure, means well, and is often as good as his meaning. I like him best, however, when he is practical. A shrewd observer, of large experience, he is always interesting when he is dealing with practical operations. But I must confess that I think he is often tedious and inflated when he indulges in digressive reflections instead of dealing with technical facts. He speaks plainly of others; I am sure, therefore, he will pardon plain speaking of himself. As I do not wish to be tedious, however, I will come to the point on which I wish to offer a remark.

My object is strongly to endorse the views of "Protagoras" in opposition to those of Mr. Bovey in dealing with an obstinate and conceited sitter. "Protagoras" says, "conciliate"; Mr. Bovey says, "flatter"; "Protagoras" says, "do not dictate, but suggest"; Mr. Bovey says, "do not confess the possession of an independent opinion, but go down, *down* into the depths of human weakness." If an old portraitist may offer an opinion, I would say, carefully avoid doing anything which will permit your sitter to despise you, which he will inevitably do if you sneak or grovel as suggested. But, says Mr. Bovey, "of course the flattery demands skilful application." True; and, as I understand it is just that skilfully applied flattery which "Protagoras" suggests when he recommends the portraitist to confess having an opinion of his own, which he is willing, nevertheless, to give up to that of his sitter. For another, and that other an expert, to be willing to give up his opinion to him, is the most soothing flattery possible to a pompous, self willed man, and he at once conceives a high opinion of the artist, respects him, and feels he loses no dignity in yielding to him. Such a man, although he often demands abjectness, always despises it, and often kicks it. Courtesy, conciliation, and as much patience as you like in the studio; but all these tinctured with self-respect, which is sure to gain the respect of the sitter; respect is followed by trust and confidence; and these secure the best conditions for an easy, natural expression and satisfactory portrait.

On this point I will, with your permission, quote a few lines from your own description, Mr. Editor, of the operations of M. Adam-Salomon, which struck me much at the time. After describing the soothing, reassuring effect of his perfect mastery of his work, you observe:—"In every instance of several sitters we saw, the *trust in the artist's skill*, ensured by his reputation, and the magnetic influence of his manner, which expressed *perfect confidence in his own operations*, had a most beneficial influence on the sitter, tending at once to ease and steadiness."

Apologizing to "Protagoras" for presuming on any defence of his remarks, and assuring Mr. Bovey of my respect for all his practical and technical opinions, I remain, sir, very truly yours, X. Y. Z.

Dear Sir,—I am exceedingly interested in the papers by "Protagoras," entitled "Masks and Faces," as they practically carry out my own views on the subject, as indicated by my contribution to the Year-Book of Photography, under the heading of "Moral Influence in Photography."

It appears to me that the pith of the influence, as dramatized in the scene with the successful operator in "Masks and Faces," is based upon this fact, which must never be overlooked in discussing this subject, viz., that the photographer who is capable of using moral influence at all must have acquired some reputation by his works, and, therefore, the sitter comes to him upon that ground; and hence it must be admitted, that whilst giving utterance to decided opinions respecting position, &c., he is really in effect saying, "You have seen my work; approving of it, you pay me a visit; now, as my success has arisen simply because I have carried out my views, I really cannot undertake to produce a satisfactory portrait or picture unless you place yourself unreservedly in my hands."

This appears to me to be the hidden motive which lays behind the spoken words of the successful operator in "Masks and Faces." Because, whilst the operator is apparently giving the sitter credit for some amount of individual opinion, he very carefully exhibits at the same time his own more decided opinion, arising from practical experience. And at last the sitter asks him what *he* would do, thus showing that he begins to waver in his own preconceived opinions.

I cannot but think that Mr. Bovey, in his remarks upon Part 5 of "Masks and Faces" is throwing cold water upon the study of this subject; and I am rather sorry to find that his fluent pen should have been taken up to write in the vein he has done. Because, whilst admitting that the study of physiognomy or character is most necessary, he apparently ridicules the manly and dignified manner of stating one's own views, which the experienced artist feels he has a right to exhibit, and which in the end will be found to carry weight—and, eventually, conviction—to the mind of the most determined sitter who ever presented himself to be taken in accordance with his own preconceived ideas of what is right or wrong.

Depend upon it, the artist will never succeed by *flattering* the whims and caprices of those outside the art-world; but, conscious of his own power, and consequent success, arising from the acquisition of knowledge by study, will endeavour to make his sitter feel the superior character of his opinions in matters of taste and art.—Yours faithfully,

Edwin Cocking.

PHOTOGRAPHIC COMPETITION IN DEVON.

Sir,—I send you the accompanying for insertion, as it may interest your readers:—

Rules for the Prizes of Five Pounds, to be given for the best Photograph of Westward Ho! Dated July 17th, 1869.

The competitors must send in, before the 19th August next, five photographs of Westward Ho! one at least to represent the pebble ridges, rocks, &c.

The photographs must be not less than half-plate size, six and a-half inches.

The prints must be untouched, and they must be mounted. The name of the artist to be enclosed in a sealed envelope, which will not be opened until the award is made. They will be exhibited in the large bath room, right and left of the prize one, with the names of the photographers, on the occasion of the visit of the British Association to Westward Ho! that the public may inspect them. The decision of the judges to be final.

Westward Ho! North Devon, August 4th, 1869. F. H.

GOLDEN SYRUP PRESERVATIVE.

Sir,—As I have successfully tried the method of preserving plates moist by means of golden syrup, I possibly may aid your correspondents "P. M." and "Try Again" by a word of advice, although I have not much to say beyond confirming the suggestions contained in your notes to their letters.

The only time I have met with a result like that described by "P. M.," I was able to account for it easily. The light having proved stronger than I had calculated (for I had over-exposed a plate), the image flashed out with great rapidity; and, in order to arrest the process of development, I hastily seized the glass containing golden syrup solution, and dashed a portion on the plate. The issue was a large irregular stain at the part where the solution was thrown on the plate, which was, indeed, near the middle, the syrup solution having been applied with careless haste. I have found since that a little care enables me to meet such cases without difficulty. In all cases I drain off the developer before applying the syrup. If the plate have been over-exposed, I quickly throw off the developer; and, applying the syrup at the edge of the plate, take care that it flows in an even, regular wave over the film; and this effectually stops further development without any risk of stains. It scarcely needs to be remarked that a solution which is intended to stop the progress of development whilst it is in operation should be applied to the surface as evenly as the iron solution which is intended to commence the operation of development; and that any failure in evenness of flow, either in commencing or stopping development, must result in stains.

One part of "Try Again's" error is, I think, easily seen. He says the only remedy for one of his troubles is the excessive use of citric acid in the developer and intensifier. Now, if he takes your advice, and uses a fresh silver solution with sufficient citric acid in intensifying, he will not need to use citric acid in his developer, and need not, therefore, incur the necessity for long exposure; but in any case he will find it wise to avoid re-developing or intensifying until he gets home, and when he applies the syrup to a simply developed plate he will usually not have the deposit of which he complains.

Trusting that these hints may be of service, I am, respectfully,

One who Profits by the News.

My Dear Sir,—I see that two of your correspondents have found a difficulty in working Mr. Robinson's golde syrup "dodge." Perhaps my experience with it may be of service to them.

The first time I tried it everything worked well; the negatives were free from any kind of stain or fog, although exposed to sunlight before washing and fixing. But when I was out one day this last spring, I was surprised to find the negative stained and turning purple brown in the shadows directly it was brought into the light. However, an examination of the syrup soon explained the cause: it was not thoroughly mixed with the water, a good deal of shaking being necessary, and was therefore much too dilute to have the desired effect. When the bottle had been well shaken, all worked well again. I find, too, that if ordinary water is used—*i.e.*, water containing chlorides and carbonates—the precipitate formed adheres very tenaciously to the film; therefore, mix one pound of golden syrup with one pint of distilled water, and label the bottle "To be well shaken before taken," and you will have a very useful ally in out-door work—one that will save no little trouble, without causing any.

I desire personally to thank Mr. Robinson for making the "dodge" known.—I am, sir, yours truly,

Norwich, August 9th, 1869. J. M. Burgess.

Dear Sir,—As the only exhibitor at the Conduit Street Exhibition who publicly stated his pictures (taken in the field and studio) to be examples of the working of the above process, I may state I found the cause of the stains and the deposit which no amount of washing can get rid of to be the want of distilled water (both in making the developer and the golden syrup solution), and using methylated spirit in the developer. Also, I have found, as a general rule, the amount of golden syrup as stated by Mr. H. P. Robinson is too much. My mode of working is, after well developing out, to drain off a second or so, and quickly pour over the golden syrup solution, and let it flow from right to left and back again. Drain off into sink, and pour a second quantity on; work over plate; drain, and place in plate-box. Per to-morrow's post I will send photograph—white house, gentleman in light suit, grey dog, taken against red brick house, white facings, with grass and gravel walk as foreground. The above is one of a series of thirty-seven cartes I took at a gentleman's house on Saturday, and, as it was too late when I returned home, the plates remained untouched until the following Monday.

If "Try Again" will send me stamped envelope, I shall have much pleasure in sending him the above-mentioned photograph, which was taken as quick as I could take the cap on and off.

To those who cannot get pure golden syrup, or, at any time when there is a deposit, if they will try slightly washing the plate first and then using the golden syrup, it will keep the plate moist for at least eighteen hours. I have used the above when short of syrup in the field.—I am, dear sir, yours faithfully,

Archer Clarke.

Stourbridge, August 10th, 1869.

[The card of gentleman on grey horse is very excellent. —Ed.]

COLLODIO-CHLORIDE FOR PAPER PRINTS.

Sir,—Some considerable time ago, when looking over the Photographic News for 1865, I came upon the notice of the March meeting of the London Photographic Society, where you, Sir, with a broad liberality, and without let or hindrance, gave to photography the valuable process of Collodio-Chloride Printing.

I had been long enough engaged in the art to wish for and welcome any means or material that would help to register and fix in the finished print the delicate shadows found in the negative, and also to give purer whites than albuminized paper produces. I therefore read your paper with more than common interest, and sympathised with the enthusiastic sentiments uttered by the Chairman, Mr.

Glaisher, Mr. Robinson, and other gentlemen, fully believing that your generosity would be rewarded by seeing the process adopted for the benefit of the art.

But manufacturers of photographic paper in this country have been slow to appreciate the value of the discovery, and to Herr Obernetter belongs the merit of producing it in such perfection as would seem to leave photographers little to wish for. I have worked his paper for upwards of a year, sending out in that time thousands of prints, from C.D.V. size to twelve by ten; and though the manipulating difficulties may seem at first to be greater, the results more than compensate for the extra trouble and expense. I will send a few prints for your inspection, and may mention, as an instance of the curious experiences we meet with while working out our art, that the negatives from which these prints were taken were sensitized in a bath scrupulously kept from sunlight for more than eighteen months.—I am, sir, your obedient servant, George Bruce.

Dunse, N.B., August 9th, 1869.

[Nothing could exceed the delicacy and richness of the prints (upwards of thirty in number) sent by our correspondent. They speak much for his care and skill as well as the excellence of the process.—Ed.]

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Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 2nd ulto., M. Balard, President, in the chair.

The President announced that the closing of the Photographic Exhibition, which was fixed for the 31st July, had been postponed until the end of the month of October.

M. Baldus presented the Society with two prints prepared by his photo-engraving process, the one produced in 1850, and the other exhibited in the Paris Exhibition of 1855.

M. C. Cros presented the Society with a copy of his pamphlet on heliochromy, entitled: *Solution du Probleme de la Photographie des Couleurs.*

M. Marion likewise forwarded to the Society a work descriptive of ancient and modern processes, which he has just published, entitled: *Catalogue Initiateur aux Procedes Anciens et Nouveaux.*

M. Marconi exhibited some positive prints obtained by a process which consists in immersing the sheets of ordinary albuminized paper in a bath prepared in a special manner, which has the effect of coagulating the albumen, the sensitizing of the paper being effected in a two or three per cent. silver bath.

M. Blanc communicated a paper in reference to the washing of dry plates (see p. 392).

M. Clouzard made some interesting remarks upon the employment of dishes manufactured of varnished wood (see p. 391).

Dr. Ozanam described and demonstrated before the members of the Society an apparatus invented by himself for purpose of registering, by means of photography, the beatings of the heart and pulse.

M. Davanne read a letter received from M. Cros, in which that gentleman discusses the positions which M. Ducos du Hauron and himself occupy in reference to the question of priority as regards the methods of producing colours in photography, which have recently been made known, and which are, in many respects, similar. M. Cros states that he forwarded to M. Ducos an edition of the *Mondes*, containing the announcement of the former gentleman's process, together with a statement of the date at which a communication on the subject was first made to the Academy of Sciences, viz., the 2nd December, 1867. As M. Ducos's patent bears date the 23rd November, 1868, M. Cros has the priority of a year almost, in regard to his first communication on the subject. M. Ducos replied to M. Cros's letter, and stated that inasmuch as neither could have been acquainted with the other's doings, the honour of discovery was common to both; he further stated that his results were the fruits of many years of labour and research, and forwarded to M. Cros specimens of his work. M. Cros concluded by pointing out the differences, both theoretical and practical, between his process and that of M. Ducos du Hauron.

M. Ducos du Hauron forwarded to the Society two specimens of heliochromy, produced by his process, by superposition, the one a reproduction of a transparent picture, the other a very small landscape view taken in the camera. The pictures were best seen by transparent light. As regards their production, the author stated that "the reproduction of the transparent picture was worthy of attention on account of the freedom, vivacity, and variety of the colours represented. It was scarcely conceivable that such a complete series of colours could be produced by three layers only, submitted to the influence of three black negatives. The Society could examine these three *cliches*, which betrayed very curious effects from the action of the three coloured glasses. The reproduction was superior to the original in harmony and artistic effect, a fact which seemed to prove that the process is based upon a very simple law of nature. The slight variation in tone from the original was due to the fact that two faint blue monotones were employed instead of one of a darker tint, and thus an imperfection became apparent. In regard to the photographic landscape, it was but a timid attempt, and the author, therefore, requested indulgence, the weather having been very unfavourable to the production of the negatives. These latter did not offer sufficient contrast. Ordinary lenses were used, whereas, in this particular kind of photography, the most rapid instruments should be employed, for it was necessary that the greatest activity should be ensured, both optically and chemically, to ensure the formation of an image by means of the orange-coloured glass. Nevertheless, this modest landscape may be deemed interesting, if not on account of its perfect execution, yet by reason of its harmonious character. Like the generality of paintings, the heliochromes lose much of their beauty by being seen at night by lamp light, and, if examined at that time, a false idea will be formed of their merits: the yellows become lighter, the blues darker, while the red is the only colour which preserves its natural brilliancy."

M. Andra presented the Society with some specimens of carbon printing, transported and rendered adherent to glass by simple pressure; he likewise read a communication detailing the method by which they had been prepared.

M. Braun forwarded a series of prints presenting double tints. They had been obtained with bichromated gelatine by means of a special process. The two tints adopted by M. Braun were black for the vigorous shadows, and sepia for the other tints.

The proceedings then terminated.

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Talk in the Studio.

The Metric System of Weights and Measures.—The second report of a commission appointed to enquire into the condition of the Board of Trade standards has just been issued. It recommends the permissive introduction of the French metric standards of weights and measures, and that the decimal scale of that system and the French nomenclature with regard thereto be adopted. It recommends also the decimal system of the coinage. Imperial weights and measures are, however, recommended to continue as the national standards for the present.

Removal of Nitrate of Silver Stains from Woven Tissues.—According to M. Grimm, chloride of copper completely removes, even from coloured woven cotton tissues, stains occasioned by nitrate of silver; the tissue is to be afterwards washed with a solution of hyposulphite of soda, and next thoroughly washed with water. From white cotton and linen tissues nitrate of silver stains are more readily and effectively removed by applying dilute solutions of permanganate of potassa and hydrochloric acid, followed by washing with hyposulphite of soda solution, and rinsing in plenty of fresh water. By these means the use of the highly poisonous cyanide of potassium is rendered unnecessary.—*Polyt Notizblatt.*

Photographic versus Literary Portraiture.—The *Athenæum*, in reviewing a volume of 460 pages, on the exploits of Admiral Farragut, U.S. navy, during a two years' cruise with the European squadron, says:—"We really learn more of Farragut himself from the photographic likeness of him, which forms the frontispiece, than from the whole account of what he did, and said, and saw throughout his visit to Europe."

Wood Engraving by Means of an Acid Composition.—M. Dulauriel, in *Les Mondes*, states that, by some observations made by him previously, he was induced to try a mixture composed of sulphuric acid, several chromates, and persulphate of iron, to bite away some portions of wood upon which, after having first covered its surface with an asphalte varnish, which protects from the action of the acid composition those parts from which this varnish is not afterwards removed by an engraver's tool, he had engraved his name. This experiment, the author states, succeeded so well that very shortly wood engraving may become a greatly improved manipulation, by means of the assistance of the biting action of acids. Unfortunately, the author neither states what kind of wood he used, nor also the precise composition of the acid mixture he has applied.—*Chemical News.*

Preservation of Protosulphate of Iron.—M. Wolborn states that protosulphate of iron is absolutely preserved and kept from even the very least trace of oxidation by placing with it a piece of camphor wrapped in a piece of clean and dry paper.—*Deutsche Ind. Zeitung.*

A Photograph of the Peabody Memorial.—We understand that Mr. Story's lifelike statue of the American philanthropist, recently erected in front of Exchange Buildings, has been produced by Messrs. James and Co., of Cannon Street; and at a meeting of the committee, Sir Benjamin Phillips in the chair, it was unanimously agreed that a copy be sent to Mr. George Peabody.

Industrial Exhibition at Munich.—Speaking of the exhibition at Munich, and the art industries of the Bavarians, the *Standard* says:—"As photographers, they have no superiors in Europe, which is much to say when you remember how important a position is now filled by this pursuit. Photography, as a class in an exhibition, includes five trades apparently very distinct: the manufacture of special chemical products; optical instrument making; delicate cabinet work; the preparation of frames and mountings; and, lastly, photography itself. All are most creditably represented here."

Alkaline Wet Process.—Mr. Sutton has recently issued a half crown pamphlet on a rapid process, wet and dry, in which the distinctive feature is the preservation of neutral or alkaline conditions. The pamphlet does not, however, contain full details of the proposed method. It is rather a prospectus setting forth the advantages of the process, stating where the materials, prepared expressly for the process by formulæ not stated, can be purchased, and giving instructions for their use. Stated in general terms, the process consists in the use of a bromized collodion, excited in an eighty-grain bath, washed well, coated with a warm solution containing three grains of patent gelatine and three grains of carbonate of soda to the ounce, exposed, rinsed, developed with pyrogallic acid and ammonia, intensified with pyrogallic acid and silver. It is probable that rapidity may be gained by such a process, but its general advantages remain, of course, to be tested by experience. We shall probably return to the subject again.

To Correspondents.

C. A. M. W.—We have not heard anything more of Mr. Whiting's photo-camera-lucida than we have published. The cause of delay we do not know. Mr. Whiting stated that he would duly announce the matter in our advertising columns when he was ready to supply the public. Probably the delay arises from the necessities of Mr. Whiting's own especial business. There is no failure that we know of in the apparatus itself, nor do we see the risk of any. In the meantime you are quite at liberty to make or get made the similar apparatus invented by Mr. Barrett, description of which appeared in our pages recently. We are satisfied that perfectly good results can be obtained in such instruments.

X. Y.—For an interior a lens of long focus is generally unsuitable. As a rule, in photographing an interior, you can, by stopping down, use a lens for a plate a size larger than the lens is made to cover, and in such case you of course secure more subject in the picture. A good portrait lens, a triples lens, a wide-angle doublet, or a rectilinear, will answer your purpose. We should prefer the last mentioned.

J. C. S.—The method of producing red negatives in the number of the News for March 24th, 1865; but it will not answer for toning transparencies, as the colour is of an actual scarlet tint. By the use of the ferridcyanide of potassium and persulphate of uranium a chocolate tone may be produced, which, in some cases, is pleasing. The modification of that process, given in our pages a few weeks ago, by a Danish correspondent, Mr. John Otto, gives a very warm black tone. Gold toning may be made to yield a pure black; bichloride of mercury followed by hypo generally gives a cold black, sometimes a very cold and unpleasant black. A very warm black may be obtained with gold by the method we described a few weeks ago; but, in such case, pyro development must be employed. Bear in mind that the colour is just as much influenced by the development as by the toning operation. Bichloride of mercury followed by a dilute solution of sulphide of ammonium gives a warm tone. Mr. Sarony has, we believe, modified his toning formula since it was published in the News. We do not know his present formula, but he will, we believe, communicate it to licensees. If you follow the instructions we gave a few weeks ago, you will have no difficulty in producing clean and brilliant transparencies for the photo-crayon portrait.

B. Barnes.—We have every reason to believe that a good adiactinic varnish applied to the window will exclude white light as well as yellow glass. The formula first published by Mr. Aldis, which we have repeated several times, answers well. Sometimes it is desirable to give two coats of the varnish. This should be done if the window is a large one, or if it ever receive direct sunlight.

B. F.—If you read the News as carefully as you say you read it constantly, you must know that we do not recommend acetic acid in a negative bath. Once in the silver bath, however, acetic acid is very difficult to remove. If you neutralize it as you propose, you form acetate of soda, and the next reaction which would follow would be the formation of acetate of silver, and the liberation of nitric acid in the bath. The chief objection to acetic acid in a bath is its unstable character. Acetate of silver usually increases density in the negative, and sometimes retards. With a simply iodized collodion it was found useful, but it is injurious rather than useful when a bromo-iodized collodion is employed.

Patchwork.—The quotations simply confirm our position. There was at one time much promise; its failure we note with unmixed regret. Declension instead of progress is matter for sorrow, not rancour; spite we have none; and jealousy is the sentiment least possible of all under the circumstances.

L. D.—Your difficulty is in your studio, and not in your lens. With a studio of twelve feet long you will find it difficult to obtain a lens which will define a standing figure or card portrait perfectly all over, without stopping down so much as to lengthen the time of sitting beyond all reasonable duration.

R. F. S.—We prefer the edges of glass plates to be roughened, especially for dry-plate work, where much handling of the plate is necessarily involved. The operation need not take much time. We usually give each edge one sharp rub upon a piece of sandstone, and this answers perfectly. A piece of "corundum" answers well. The roughing process should be effected before cleaning the glass.

N. B.—The dirty, yellowish brown spots at the back of the print are caused by hyposulphite of soda coming into contact with the sensitive paper or the print before it was fixed. There are two common sources of such spots: one is handling the prints with fingers which have touched hypo, and the other, rinsing the print, prior to toning, in dishes which have been used for washing or rinsing prints immediately after fixing. You cannot remove such stains after they have been made; but the preventive is simple: it consists in using more care.

F.—You had better consult the district surveyor before completing your arrangements. You *must* consult him two days before commencing the erection. The exception in the Act, in reference to green-houses, refers only to houses consisting of glass sashes, sash-frames, and doors. There must be nothing equivalent to a wall made of wood. That must be of brick, and wherever brick is used a proper foundation must be secured. If you act in opposition to the Act you will probably have to pull down your work and be subject to a fine besides.

Bete Noir.—The preparation used for blacking the brass-work of lenses is as follows:—Four drachms of bichloride of platinum and one grain of nitrate of silver in six ounces of water. The brass-work is made quite clean, and the preparation is applied with a camel's-hair pencil. When the right depth is attained, wash with clean water, dry, and finish with blacklead.

Payne Jennings.—Thanks. The portrait is very fine and rich. It has been duly delivered. The landscapes are also very fine.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 572.—August 20, 1869.

PATENT OFFICE

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POISONING BY CYANIDE, AND ITS ANTIDOTES.

The melancholy record which we publish on another page of the death of a young lady, the daughter of a photographer, by means of cyanide of potassium, gives a painful weight to the recommendations we have often urged upon our readers to banish this deadly and unnecessary salt from their premises; and it also impresses the urgency and importance of some knowledge amongst photographers and all members of their families of the remedial treatment *to be applied immediately* in any case of the accidental or intentional swallowing of this fatally active poison.

We would anxiously avoid, in dwelling on this question, saying any words which may add to the deep sorrow of the bereaved family of one of our readers, but the circumstances so touchingly and significantly point a moral to all photographers, that we may not let them pass without reiterating our caution and advice, and again stating the remedies which may be of avail. An accomplished and intelligent young lady, in a moment of aberration, or under some inscrutable impulse the nature of which we seek not here to penetrate, swallows a poisonous dose of cyanide, to which she had access in her father's dark room, and in half an hour was a corpse. Notwithstanding the fatal character of the poison, there are circumstances recorded in the narrative of the case which reaches us, which seem to suggest that had a knowledge of the antidote been familiar (as it is desirable it should be wherever the poison is used), the life might in this case have been saved. Whether any antidote was administered at all after the arrival of medical assistance is not stated. The local newspaper report of the inquest records the use of the stomach-pump; and we may with propriety assume that whatever could be done remedially was done by the medical man called in. Possibly an antidote was administered: possibly the medical man saw it was too late. But in any case, it should be borne in mind that promptness in administering an antidote is of all-exceeding importance, as the rapidity with which the fatal conditions supervene is the most terrible element in the case. Let it always be remembered that the ordinary iron developing solution, just as it is found in the dark room, is an antidote to cyanide, and, if swallowed immediately, would often save life.

In the sad case in question, the ordinary rapidity of symptoms was marvellously absent, arising from the fact that the cyanide had been swallowed in a solid state, and not in solution; and its poisonous action would not commence until it began to dissolve. When taken in solution, tetanic spasms and firm clenching of the teeth so rapidly follow that the administration of remedies becomes difficult or impossible; but here the young lady was able to describe to her sister what she had done, repeatedly expressing regret; and, so far as we can glean, upwards of half an hour must have elapsed before she died. If a knowledge of the antidote had been perfectly familiar, and a solution of sulphate of iron had been at once administered, the cyanide would have been converted into harmless Prussian blue as quickly as it was dissolved. We again repeat, we would not say anything which could imply blame or cause pain to the survivors; we simply wish to urge upon all our readers who keep this dangerous salt on their shelves the importance of rendering everyone familiar with the iron developer as its antidote, and to have in some accessible part of their establishment instructions for treatment always at hand.

The amount of the poison taken in this case is unknown. As little as three grains of pure cyanide of potassium will sometimes form a fatal dose, five grains generally being sufficient to cause death. The medical evidence, as we have it recorded, is a little perplexing. It is stated that from subsequent analysis the conclusion was attained that the young lady had taken sufficient of the poison to kill several people; and it is further added that the poison was doubtless taken as a solid lump, and hence it did not act so rapidly as usual. A solid lump of cyanide weighing five grains forms a pill quite as large as could be easily swallowed, especially with the rough broken edges a piece of cyanide usually possesses, and we can scarcely suppose that two or more pieces would be swallowed in succession. There are cases on record of recovering from cyanide and hydrocyanic acid poisoning, in one of which, as related by Dr. Taylor, the patient had swallowed a dose of the acid equal to six grains of cyanide. Perceiving his mistake, he at once swallowed an ounce of aromatic spirits of ammonia with a little water. In a few minutes afterwards sulphate of iron was administered, and cold effusion applied, and, by perseverance with this treatment, he eventually recovered.

A ready-mixed iron developing solution is always at hand, and should be administered at once, either as it is, or with a little ammonia or carbonate of soda added to neutralize free acid. If it be an old solution, so much the better, as, for the most exact effect of the remedy, a portion of a persalt of iron is necessary. This should be followed by stimulants—such as *sal volatile*, and cold effusion applied to the spine. All this may be safely done before a medical man arrives. He, of course, would always be sent for at once, but as promptness determines the issue of life or death, every member of a photographer's family and establishment should know that a solution of sulphate of iron—such as that used for development—should be administered without a moment's delay.

Every photographer knows that if the iron developer, in the course of his manipulations, comes into contact with cyanide of potassium, a decomposition ensues in which

Prussian blue is formed; and a similar action takes place in the stomach: the deadly poison is neutralized, and a harmless compound formed in its place.

The exact decomposition is effected by a solution of iron containing a persalt in the proportion of four equivalents to three equivalents of a protosalt. An excellent paper, published some time ago in the *Pharmaceutical Journal*, entered into detail as to the most efficient preparation for exhibition in any form of hydrocyanic poisoning, giving some striking instances of its value as an antidote. We subjoin the details as then published, and we recommend every photographer to preserve them for ready reference, always remembering that a simple solution of sulphate of iron may be given without a moment's delay:—

Prussic acid antidote.—Take of liquor of perchloride of iron 37 minims, protosulphate of iron in crystals, as pure as possible, 25 grains; as much water as make a solution of a protosesquisalt of iron, measuring about half an ounce. Dissolve, on the other hand, 77 grains crystallized carbonate of soda in about half an ounce of water. These quantities destroy the poisonous action of between 100 and 200 minims of medicinal prussic acid, officinal strength, on giving first the one liquid and then the other.

Antidote for cyanide of potassium.—The antidote for this compound is the same as for prussic acid, except that the solution of protosesquisalt of iron is to be used without the alkaline solution, the prussic acid being already combined with an alkali; tho use of the alkali, however, would not be injurious; a harmless yellow prussiate would be formed. In this case, in consequence of the possible presence of free acid in the stomach, the alkaline liquid should be given first. The quantities given as the prussic acid antidote would decompose 35 grains of cyanide of potassium.

To be suitable for the antidotes, the liquor ferri perchloridi must answer to the following tests:—One fluid drachm must contain 15·62 grains peroxide of iron; ammonia must give a pure reddish-brown precipitate, without any shade of black; it must not smell strongly acid, nor, after slight dilution, give a brisk effervescence with a piece of zinc.

The writers, in speaking of the working of the remedy, remark:—

Tho principle of the action of the antidote is exceedingly simple, and easily understood; at least, if certain theoretical views be put aside, and the reaction with prussic acid be merely considered as a simple case of double decomposition, which results in the formation in the stomach of the harmless compound known as Prussian blue. The formula of Prussian blue is $2\,(Fe_2, Cy_3) + 3\,(Fe, Cy)$; showing that 7 equivalents of iron and 9 equivalents of cyanogen are contained in one equivalent of the compound. To produce this compound with the prussic acid there are required 7 equivalents of iron in the form of a soluble compound, of which 4 equivalents must be in the state of persalt, and 3 equivalents in tho state of protosalt. The ready means of obtaining this solution are supplied in the liq. ferri perchloridi, and protosulphate of iron or green vitriol. It easy to find the quantity of the perchloride solution, containing in grains 4 equivalents of iron. Two ounces, or 875 grains, are contained in 10 fluid ounces of the solution. Keeping now in mind that 4 equivalents of iron must be in the state of peroxide, or perchloride, which is equivalent, the quantity of perchloride solution required in the production of an equivalent of Prussian blue may be found without any difficulty, thus:—

Grs. Iron.		Fl. oz. Sol		4 eq. Iron.		Fl. oz. Sol.
875	:	10	::	112	:	1·28, or 614 minims.

The 3 equivalents of iron in the form of protosalt, required for the formation of Prussian blue, are supplied as sulphate of protoxide of iron, the equivalent of which is 139; multiplying that number by 3 gives 417 grains.

It must be quite clear, therefore, that 614 minims of solution of perchloride of iron, and 417 grains of green vitriol, supply the iron in the form and quantity necessary for the production of Prussian blue; and as these ingredients contain, respectively, 6 equivalents of chlorine and 3 equivalents of sulphuric acid (which in Prussian blue are replaced by 9 equivalents of prussic acid), it is evident, as the equivalent of prussic acid is 27, that 9 times that sum is 243; 243 grains of prussic acid can, consequently, be destroyed by the above quantities; therefore, the hundredth of that quantity, or 2·4 grains (a good deal more than 100 minims of medicinal prussic acid), can be destroyed as a poison by 6·14 minims of solution of perchloride of iron, and 4·17 grains of green vitriol; but we need hardly say that prussic acid can take the place of neither hydrochloric nor sulphuric acid, unless, at the same time, an equivalent quantity of a strong base is supplied, to take the strong acid from the iron, the affinity of which is comparatively weak. Under such circumstances, the iron at once seizes on the prussic acid, and tho desired result is obtained—the formation of a harmless and stable compound. The effect is instantaneous.

Once more we repeat our advice: Banish cyanide from the laboratory, especially for regular use. If a small supply be required for occasional purposes, let it be capped, tied down, duly labelled, and placed in an inaccessible part of the establishment, where it cannot be taken by accident, and not easily by design. Further, let every person in a photographic establishment be familiar with the simplest remedies for the poisons commonly employed in photography. Indeed, a sheet of simple instructions how to deal in such cases ought to be hung up in some part of the establishment accessible to every one. We do not write in the spirit of alarmists, nor do we affirm that under ordinary circumstances a photographer's studio contains more elements of danger than most establishments; but surely the proposition is a simple one, that wherever agents destructive to life are accessible, and may be taken by accident or intention, the remedies should at all times be equally accessible, and the means for rendering them available made easy and certain.

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MR. JOHNSON'S CARBON PROCESS AND M. ANDRA'S EXPERIMENTS.

The history of photography has been full of examples of simultaneous discovery by different persons, of re-discovery of published processes, and of necessary reclamations; and carbon printing processes have had even more than their share of these examples. The principle of exposure on one side and development on the other was independently discovered and published in rapid succession by the Abbe Laborde, by M. Poitevin, by Mr. Burnett, and by Mr. Blair, the last-named gentleman being, we believe, the first to give it a practical application. Other points in carbon printing have undergone similar histories. The single transfer process on albuminized paper, indicated in our pages five years ago, has more than once recently been rediscovered in France, and described, as it was believed to be, as a valuable novelty.

The facts are not mentioned in a spirit of blame. The publication of processes believed to be novel is a gain to the art, and we should be sorry if an experimentalist at any time held back important results simply because they might possibly have been, without his knowledge, published before. It is, however, matter for some slight regret that a process which has been fully described in London, and the description published in at least one of the French journals, should, a few months afterwards, be brought forward at the French Photographic Society, and received, without challenge or explanation, as a novelty.

This is the fact in relation to the process described by M. Andra at the last meeting of the French Photographic Society, in a paper we print on another page. M. Andra—in all good faith, we are satisfied, and as the result of independent discovery—described his experiments in carbon transfers, and the mode in which he finally arrived at the important result of making the gelatinous carbon tissue adhere to the surface of a plate of glass without the aid of any cementing material. He has discovered, so far as he has gone, Mr. Johnson's method, unfortunately, however, some months after its patenting and publication in France as well as in this country.

That it was an independent discovery we have said we had no doubt; but if any doubt existed, M. Andra's paper furnishes proof that he was not familiar with Mr. Johnson's process. So far as he has gone, he has not been able to remove the image developed on the glass to another surface. In speaking of the transfer of the film to paper, whilst hoping for a means of securing it, he says, "the adherence of the film is of such a character that I have not as yet obtained any satisfactory results." Now, as the means of obtaining the satisfactory results in question form an important part in Mr. Johnson's process, it is clear that it cannot have come under the attention of M. Andra, whose experiments have hitherto only gone to the extent he has described.

The chief source of regret in such matters is twofold: first, a paper read at a society acquires considerable attention, and, passing the ordeal of personal attention without challenge, acquires authority, so that many persons inevitably acquire the idea that it is the original discovery and first announcement, the difficulty of the prior discoverer in establishing his claims being much enhanced by these circumstances; second, the process having been patented in France, many persons, having derived their first idea from the paper read at the Society, will be convinced with difficulty that they are prohibited from its use by the prior existence of a patent. Mr. Johnson will doubtless take the most efficient step in correcting this error by communicating with the French Society on the subject.

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MASKS AND FACES.

BY PROTAGORAS.

Part VII.—About my Friend "Brown."

The other evening I was sitting quietly at home; I had glanced through my *Daily News*, had carefully read my Photographic News; and, to complete my night's reading—for I am a great reader—I was only hesitating whether I should re-read one of South's fine old sermons, or begin again one of Shakespeare's plays, when in came my old friend "Brown." I may as well say at once that his name is no more "Brown" than mine is, but as I have not his permission to give it, that one will do till time or circumstance shall reveal the genuine one. "Brown," as I shall take the liberty of calling him, is quite an old friend of mine. We have many tastes, and some pursuits, in common. "Brown" is an old photographer. He and I were early amateurs together, before collodion came up. After that, I drifted into professional photography, and he into something better. Still we keep up our friendship. He often amuses himself still with the camera, and is suffiently interested to keep himself acquainted with the progress of the art. He was an early member of the London Photographic Society, and, like many others, though he still continues his membership, he rarely attends the meetings.

"Brown" is a bit of a character in his way. I rather like him for that; he is somewhat original in his views, but he is not disagreeably eccentric. I often notice that men who, as the phrase is, think for themselves, are self-opinionated, crotchety, dogmatic, and pugnacious individuals, and are rarely agreeable companions. "Brown" is different. He and I get on very well together—on the give-and-take principle. We often have stout arguments together. We scarcely ever look at things from quite the same point of view. "Brown" *will* get out of the beaten track; he says he cannot bear to go in the common rut. You might think from this that "Brown" was a radical go-a-head personage; but he is not; he is a strict conservative. You cannot annoy him more than to talk about "progress;" that word to him is like a red rag to a bull; it makes him irritable and excited at once. Knowing his weakness, I often draw him out, and have a sly laugh at him—behind my face. When we practised calotype together, I had the greatest difficulty in getting him to master the wax-paper process. He was scarcely equal to that, when collodion came up, and another struggle commenced. He, however, got to like the glass positives, and took very good ones, but he never went heartily into taking glass negatives. About this time "Brown" got a lift in the world. Then the carte-de-visite mania came on, and half the costermongers and showmen in the kingdom rushed into photography. "Brown" then said it was time for any one who had any self-respect to leave photography to the sweeps and crossing-sweepers. This was "Brown's" cynical mode of expressing himself.

On this particular evening, as soon as "Brown" was seated, he began, in his usual chaffing manner, "What's the last photographic news?"

"Here it is," said I, handing him the last copy of the Photographic News that I had been reading.

"That's not what I asked for," said he (I knew very well what he meant, but I often tease him by intentionally misunderstanding him); "what's the last dodge out? Haven't you invented a new lens this week? Has somebody been taking the shower of meteors the other night, or has any one been discovering a brimstone-and-treacle process to be used on the young 'uns—to take their portraits and give them a dose at the same time?"

This is about the style that "Brown" generally begins I scarcely know, sometimes, how to answer him, he goes on in such an odd and abrupt manner. On this occasion, I remember I put on as solemn a face as I could call up, and, looking him straight in the eyes, I said, "My dear friend 'Brown'"—(of course I did not call him "Brown;" I addressed him by his proper name; but as we have agreed to call him "Brown," so "Brown" he must be to the end of the chapter)—"My dear friend 'Brown,' when you speak respectfully of that valuable art that you once had pleasure in practising, I shall be inclined to answer you, not otherwise."

Brown.—"How can I speak respectfully of that which I do not respect. When I practised the art it was a worthy occupation for a gentleman; *now* it has become so common, that the tag, rag, and bob-tail have it entirely in their possession; and they are welcome to it for me."

Protagoras.—"I beg your pardon. I have frequently told you of the improvement in the present class of persons who now professionally practise photography. You *will* persist in ignoring the beneficial change that has taken place since the subsidence of the carte-de-visite mania."

Brown.—"Because the shoe-blacks have ceased to use nitrate of silver to soil their hands, and have resumed their original blacking, you think the art has risen! I suppose the carpenters and masons have now got possession. The truth is, that in these abominable days of free trade the art has been allowed to go to the dogs. None but artists should practise the art—that is, professionally."

Protagoras.—"I think it too bad for you to sneer at professional photographers as 'carpenters and masons.' After all, what are artists but 'painters and glaziers?'" (I thought he should not have all the sneering to himself.)

Brown.—"If you have nothing better than bad puns to support your argument, I think the sooner we change the subject the better. You cannot deny that photography has sadly degenerated. All the hopes originally entertained of the great service it would render to art, you must admit have been dissipated long since. In fact, the discovery is now being made that photography is a real injury to art; that the advancement of art has been materially retarded by photography; and that, so far as art is concerned, it would be no loss if photography were to be snuffed out to-morrow."

("Brown" sometimes gives utterance to such unexpected and daring expressions that, for the moment, I am utterly unprepared to reply to him. What can be more ridiculous than the preceding observations? I have since discovered that "Brown" had the evening before been dining with a few artists, and there were also a couple of engravers present. The fun had been "fast and furious," and poor photography had been heavily attacked. "Brown," to his credit be it spoken, had fought the battle well, taking up the cudgels for photography; but the odds were against him. But "Brown" is such a queer stick that you never know where you have him. Among the artists, when photography was attacked, he defended it tooth and nail; but when he comes to me he is down on the black art, as the saying is, like a thousand of bricks. I often have a row with "Brown" for this contradictoriness of character. It is no use; "Brown" will be "Brown.")

Protagoras.—"Mr. 'Brown,' I am astonished at *you* giving utterance to such thoughts! *You*, who ought to know better! *You*, who *do* know better! *You*, who have often admitted to me that, next to the printing press and the steam engine, photography is the proudest triumph of the nineteenth century, the electric telegraph not excepted. Mr. 'Brown,' I am astonished, I am almost hurt, at hearing such sentiments from you. Many men are blinded by narrow self-interest, and others by ignorance and egotistical notions; but for you, Mr. 'Brown,' to ally yourself with such ideas is literally sinning against light and knowledge."

Brown.—"Go it! Pile it on! I like to be abused."

Protagoras.—"You know very well that since the days of Adam, art never had such an obedient or willing handmaid as photography. It never had such an invaluable or unexpected aid, if artists would but avail themselves. But artists do avail themselves of its great power, and only the mean and shabby ones ignore the ladder by which they rise. Ignorance and self-interest may be pleaded for the poor penmen who condemned the printing-press, and the post-boys who railed at the railway, but no such excuse is permissible to the artists. Shame on them, and also on those who utter their narrow thoughts."

("Brown" looked rather confused as I warmed up and expressed my indignation.)

Brown.—"You see, you photographers have your views, and artists have theirs, but on questions of art they must know best. You will certainly admit that?"

Protagoras.—"I admit nothing that is not true, no matter by whom expressed."

Brown.—"You see, you and I look at the matter from different points of view. You are too exclusively a photographer to understand the subject in all its bearings. It cannot be expected that from your stand-point that you can perceive all its aspects. I do not blame you, but it is to be regretted that your vision is so restricted, and your point of view so low."

("Brown," when he is beaten in argument, often attempts to come the lofty and supercilious over me, but it won't do.)

Protagoras.—"Mr. 'Brown,' this is not the first time we have exchanged views, and that I have had occasion to reproach you with not taking the full advantage of your knowledge. The present is an age of progress, of advancement, of—"

Brown.—"Progress and advancement be hanged! I hate the cant phrases. If you begin to talk progress, I shall go. I think we have had enough of it for one night. You think over what I have said, and the next time we have a chat together, you'll be a wiser man."

Protagoras.—"I will let you go on the condition that we see each other again shortly. I have other topics to discuss with you. I hope you will be more open to reason on the next occasion."

Brown.—"I'll not promise. Good night!"

Protagoras.—"Good night!"

PHOTOGRAPHIC EXHIBITION AT GRONINGEN.

The award of medals has just been made by the jury at this, we believe the first, Dutch Photographic Exhibition. The successful competitors have been divided into three classes, gold, silver, and bronze medals being awarded in each division. It will be seen that in this country Messrs. Woodbury and England, both of London, and Mr. Lafosse, of Manchester, have received silver medals; and Mr. Beasley (an amateur of London), Mr. Hubbard, and Mrs. Cameron, bronze medals. The recipients of medals generally are as follows:—

Gold Medals.—C. Bergamasco, for portraits; Joseph Albert, for various processes; C. Naya, for reproductions of oil paintings; F. Bruckmann, for reproductions of engravings.

Silver Medals.—Leon and Levy. for stereoscopic views; G. Volkering, for landscapes; A. Caccia, for sea views; J. H. Vander Weyer, for portraits; A. J. Lafosse (Manchester), for portraits; C. Matzner, for portraits and landscapes; C. Reutlinger, for portraits; C. Schaarwachter, for carbon prints; F. Reinecke, for interiors; P. Kaiser, for encaustic pictures; P. E. Placet, for heliography; W. B. Woodbury (London), photo-relief printing; C. Binger and Co., reproductions; E. Fierlants, reproductions; W. England (London), landscapes; C. Kindermann, portraits; C. Koller, ethnographical studies; A. Ochs, views of the Danube; B. Sebastianutti, portraits.

Bronze Medals.—G. Reece, for stereoscopic views; Mrs. Cameron (Isle of Wight), portraits; M. Wane (Isle of Man), portraits; C. Borntraeger, J. Ephraim, junior, J. Julius, and A. Red, for groups; F. Beasley, junior (London), landscapes; A. Oberty, views; J. Hubbard (London), interiors and portraits; F. J. Von Kolkow, photo-galvanotype; Dr. N. Pfretzschner, landscapes; J. Schopff, maps; A. L. Oversluys; F. Bosse, photoxylographs; E. Alpers, reproduction of bas-reliefs.

From the above it will be seen that three of the silver and four of the bronze medals were awarded to competitors from this country.

ON THE TRANSFER AND ATTACHMENT OF CARBON PRINTS TO GLASS BY SINGLE PRESSURE.

BY M. ANDRA.*

Several weeks ago, whilst occupied more particularly with the production of carbon pictures, it occurred to me to substitute a glass plate for albuminized paper in the transport of the exposed and insoluble bichromate film, so as to obtain images capable of being viewed as transparencies. For this purpose I essayed successively to spread upon the glass various adherent substances—such as albumen or gelatine and alum. My endeavours were, however, attended with but slight success, for the cementing material was never uniform, and the result was a rising of the film in many places, causing the picture to become more or less injured on the application of the boiling water. Discouraged at my results, I was on the point of abandoning my idea, when I made a last attempt upon a perfectly clean glass, and here at once discovered that the rising of the film was less serious. I continued my experiments, and am now enabled to develop without difficulty all carbon or pigment prints upon glass, my method of working being briefly as follows:—

The paper I employ is prepared with coloured gelatine in the same way precisely as that described by M. Jeanrenaud. I prefer a thin paper, without grain, and glazed. After being sensitized, it is exposed in exactly the same way as in ordinary carbon printing under a negative, for a suitable period, varying according to the degree of colour desired; it is then placed against the surface of a well-cleaned glass plate, both being at the same time immersed in cold water. The plate is now taken out of the water, the gelatine surface adhering to the glass, and a roller passed two or three times over the paper, a sheet of filtering-paper having been first laid thereon. The pressure thus exerted gets rid of the water without allowing the formation of air-bubbles, and the sensitive film is then sufficiently adherent from the fact of the absence of air between the two surfaces. With small photographs the development may be proceeded with forthwith, but with those of larger size it is best to allow them to dry under the moderate pressure of an ordinary printing-frame. The employment of a regular press would no doubt be preferable, but in my work I found it unnecessary to have recourse to one.

The development is carried on in identically the same way as when albuminized paper is used. The plates are placed at the bottom of a flat dish, the paper uppermost, and boiling water is poured upon the same. It is indispensable to wait until the paper is detached spontaneously, leaving upon the plate the image of insoluble gelatine; this occurs generally on the first application of the water, and always on the second or third application. The plate is then allowed to free itself from any of the soluble pigment remaining on the surface, by moving it gently to and fro in water of a lower temperature, at 50°

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* Read before the French Photographic Society.

or 60° Cent. Finally, the image is washed in cold water, and allowed to dry spontaneously. The operation is one of the simplest, and should not be accelerated, as it requires, on an average, a period of about ten minutes. Never does the operation require so long as half an hour, and, with a sufficient number of baths, as many plates as may be desired can be developed at the same time.

The prints obtained in this manner appear to me to present finer modelling even than those upon paper. The more vigorous they are—that is to say, the longer they have been exposed—the brighter do they appear as transparencies. When only moderately printed, the pictures should be viewed by reflection, laid against a white or tinted paper. For portraits especially which are required to be placed under glass, the glass support is very useful, and may be used in framing. In the latter case—when viewed, therefore, through the glass—they are seen in their true position, and not reversed, as is the case with prints transferred upon albuminized paper. This result may, however, be obtained by effecting a second transport of the image upon paper, but the adherence of the film is of such a character that I have not as yet obtained any satisfactory results.

I take this opportunity of calling the attention of the Society to two prints developed upon enamel, the softness and modelling of which appear to me worthy of attention. I have also been able to transport the carbon film upon panels, ready for manipulation by the brush of the artist.

In conclusion, I may state that in this process the image, being obtained upon glass—that is to say, upon a surface perfectly level and rigid—it is possible to take a casting of the reliefs and depressions in the gelatine, and thus to obtain an engraved plate of the most exquisite fineness, of which I hope shortly to exhibit specimens.

In regard to this communication, I would mention that I do not pretend to the announcement of any discovery; I have merely confined myself to making known the results of my own personal experience, in the hope that they may prove of interest to others engaged upon similar work.

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ON THE ACTION OF CHLORIDE OF GOLD UPON CERTAIN SALTS OF SILVER.

BY JOHN SPILLER, F.C.S.

Whilst experimenting, some time since, with the view of establishing the possibility of preparing a mixed gold and silver solution which, when applied to paper, would furnish at once the means of producing prints that either did not require toning, or assumed an agreeable colour whilst undergoing the operation of fixing, I was led to study the chemical reactions involved in the precipitation of nitrate of silver by chloride of gold. My object was to obtain, if possible, the nitrate of gold by double decomposition of the two salts, at the sacrifice of an equivalent amount of silver as chloride; but, contrary to my expectation, it was found impossible to prepare a gold solution in this manner, for the whole of the metal went down in combination with the chloride of silver, leaving only a very acid solution as the supernatant liquid. Desirous of ascertaining the composition of the precipitate, I made the following experiment:—Chloride of gold crystals were dissolved in water, and the solution then evaporated, as far as possible, in a porcelain basin mounted on a water-bath. In this way the gold salt was obtained with a *minimum* of free acid, and its constitution may fairly be assumed, and subsequently proved to be represented by the formula $AuCl_3HCl$. This was again dissolved in water, and slowly poured, with constant stirring, into a large excess of pure nitrate of silver solution. A heavy ochrey-yellow precipitate was thrown down, which could be easily washed by decantation, and the reaction of the liquid became powerfully acid to test-papers, and caused great effervescence with carbonate of soda.

The yellow product was dried in a warm closet, accurately weighed, and then analyzed in the following manner:—A known quantity of the substance was fused with a mixture of the carbonates of potash and soda in a porcelain crucible, when the metals became reduced and formed an alloy, which remained insoluble upon treating the fused mass with water. The metallic sponge was well washed, and then treated with hot nitric acid, to dissolve out the silver; the residual gold proved to be pure, with the exception of a trace of silica (derived from the porcelain crucible), the weight of which was ascertained and deducted. The amount of silver dissolved out by the nitric acid was determined by precipitation as chloride, and, finally, the existence of chlorine in the alkaline flux was established by the usual tests. The results furnished by this experiment were as under:—

Weight of substance taken	...	10·00 grains
Weight of gold obtained	...	2·50 ,,
Weight of chloride of silver	...	7·18 ,,

A small deficiency is accounted for by the presence of oxygen, which was found to be given off upon heating the substance in a test-tube. Calculating the amounts of chlorine and silver contained in 7·18 grains of the chloride, and supplying the deficiency as the weight of oxygen, we obtain the following percentages:—

Gold	... 25·00
Silver	... 54·03
Chloride...	... 17·77
Oxygen	... 3·20
	100·00

The yellow substance is thus proved by chemical analysis to contain one atom of teroxide of gold associated with four atoms of chloride of silver, and its formation may be explained by the following equation:—

$$AuCl_3, HCl + 4AgO, NO_5 + 3HO$$
$$= (AuO_3 + 4AgCl) + 4HO, NO_5.$$

A similar experiment made with the fluoride of silver, instead of the nitrate, and a different sample of chloride of gold, furnished apparently the same yellow precipitate with liberation of hydrofluoric acid. This product was also submitted to analysis, but a lower ratio of silver was found, and the results indicated a composition which nearly coincided with the requirements of the formula—

$$AuO_3 + 3Ag\ Cl.$$

I am not able to say at the present time whether the sample of chloride of gold used in the latter instance had been more carefully treated with the view of separating the free acid; but it appears probable that the formation of this compound would be the direct consequence of employing the simple auric terchloride, $AuCl_3$, instead of the acid salt, $AuCl_3$, HCl. If such should have been the case, the product in my second experiment was formed thus—

$$AuCl_3 + 3AgF + 3HO$$
$$= (AuO_3 + 3AgCl) + 3HF.$$

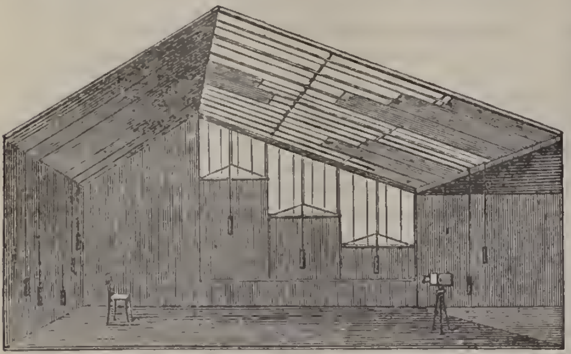
The metal platinum, according to Vauquelin, possesses the property of being precipitated as oxide along with the chloride of silver, when normal solutions of bichloride of platinum and nitrate of silver are mixed. I have confirmed this observation by qualitative trials—obtaining a yellowish or fawn-coloured precipitate—but have not made any analysis.

After obtaining the foregoing results with gold, I tried these compounds on paper and in collodion for photographic purposes. For printing, it was necessary to submit the paper to a double treatment in sensitizing it, and these operations—floating successively on chloride of gold and nitrate of silver solutions—must be performed immediately before use, in order to escape the effects of spontaneous discolouration. Thus employed, I found that the consumption of the precious metals was larger for the same ultimate results than by the established process; but there is one aspect of the case which I have repeatedly studied in the hope of eliciting a really practical method; I refer to the circumstance that upon matt paper chloride of silver may be produced with a slight excess of common salt, and in this state preserved for a long time in a perfectly dark place. When required for use in rapid printing, its surface may be "extra sensitized" by floating upon a highly dilute solution of chloride of gold, and hanging up to dry. The paper gives from the first very agreeable tints, which remain almost intact whilst in the fixing bath, so that no supplementary toning process seems to be required.

The use of chloride of gold in collodion has, in my hands, invariably led to the fogging of the plate upon development. A mere trace only being employed, gives rise to a kind of impenetrable veil which obscures the details of the picture—a result due, I believe, to the exceedingly rapid reduction of gold salts, as compared with those of silver under the action of sulphate of iron or other developer.—*Photographic Journal.*

AN AMERICAN STUDIO.

The recently erected studio of Messrs. Keeler, Suddards, and Fennemore, in Philadelphia, is described by our excellent contemporary, published in that city, as a very efficient one. We condense the account of it. The subjoined diagram is a view from the east, showing the top and west side-light, with the arrangement of curtains managed by weights and pulleys.



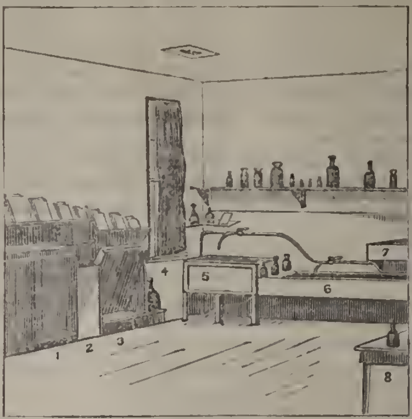
The dimensions are as follow :—

Width of top-light	19 feet
Length of top-light...	12 ,,
Width of side-light...	12 ,,
Lowest height of side-light ...	7 ,,
Greatest height of side-light ...	12 ,,
Pitch of top-light	5 ,,

The room, being wide, is divided in the centre by a curtain, and thus two operators may work in the light at once. The glass is blue-frosted.

A ventilator back of the skylight is arranged so that the air in the room is always fresh. The middle part of the side-lights may also be thrown open. The management of such a studio is easy, and the cost of its erection moderate.

The dark room, which is under the control of Mr. Fennemore, is described as roomy, amply lighted, and well arranged. A description, with diagram, will aid the reader. The dark room is at the north-west corner of the studio, convenient to the operator, and yet out of the way. Entering the room, we find on the left, next to the door, a small closet or cupboard for chemicals; on the left hand, or west side, 1, a dumb waiter, communicating with the workroom on the ground floor, from which glass, &c., are supplied; 2, a small closet, used for filtering apparatus for the bath; 3, is the negative bath; 4, is a window of ordinary good size, with orange glass, covered with a yellow curtain, and also furnished with a dark opaque curtain sliding on a rod, so that the room may be made very dark, or moderately so, at will. At the north end of the room are three tanks; viz., 5, thirty inches square by twelve inches deep, for developing and first washings; 6, thirty inches wide, forty-seven inches long, six inches deep, for final washing of the negatives; and, 7, twenty inches by twenty-four inches and three inches deep, situated on a stand eighteen inches, over No. 6, as will be seen in the drawing, used for fixing the negatives.



No. 5 is always kept half full of water, and, instead of having a waste-pipe merely, has an outlet through the floor of the room, down to a barrel on the lower floor, which catches the waste solution. (This waste solution, after standing over night, in order to allow the silver to subside, is then drawn off every morning.) The fixing bath, by being smaller than and over the washing tank, and eighteen inches above it, permits the negatives to be taken out, and the droppings to fall into the washing tank, thus avoiding droppings of hypo on the floor. The developing tank is supplied with one faucet, and the washing tank with two, so that two negatives can be washing all the time.

On the east side is a table (8) on which are kept collodion-pourers and other articles used in coating the plates. Over the dumb waiter, &c., is a shelf containing the varied sizes of negative glass, &c.; over the bath a shelf for the plate-holders.

Two feet from the ceiling, all around the room, are shelves for varied articles not in use. Over the tanks nails are driven to hang the negatives. The closets, &c., are all painted. The floor is covered with brown oil-cloth, wiped with a damp cloth daily, and never swept. The walls are papered. No superfluities are allowed in the room. Its size is eight feet wide east to west, by fourteen feet long north to south. The tanks across the end of the room occupy three feet space, and the bath, &c., eighteen inches, leaving a very comfortable amount of space to work in. It is ventilated by an aperture through the ceiling and roof, and by the dumb-waiter, the mouth of which latter is level with the floor.

With this admirable studio are connected an elegant reception room on the first floor, rooms for mounting, washing, dressing, &c., to the number of eleven. Added to these is Mr. Fennemore's laboratory, twenty by forty feet, where he manufactures collodion and other chemicals.

GLASS POSITIVES FOR THE MAGIC LANTERN.

BY JOHN C. BROWNE.*

The *Nitrate Solution* is as follows :—

Water	1 ounce
Nitrate of silver	40 grains.

Make slightly acid with nitric acid, C. P. Iodize the solution by allowing a plate coated with excited collodion to remain in it over night. Filter.

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* Continued from p. 393.

Developing Solution.

Make a saturated solution of—

Ammonia-sulphate of iron (in water)...	1 ounce
Glacial acetic acid	1 drachm

Filter, and use as a stock bottle. This solution will keep an indefinite length of time in excellent condition. Crystals will form in the stock bottle after standing a number of hours, but that is of no consequence, as the strength of the solution is correct.

In developing a plate, use five drachms of water to two drachms of ammonia-sulphate of iron from the stock bottle. During hot weather, use ice-water to retard the action of the developer.

Fixing Solution.

Hyposulphite of soda or cyanide of potassium. Either will answer, but the action of cyanide appears to make a somewhat brighter picture.

Having prepared everything in order, coat the plate with collodion, and dip in the nitrate solution; remove the plate as soon as the oily lines disappear, drain off the excess of silver by resting its lower edge upon several thicknesses of tissue-paper (or bibulous paper of any kind), then wipe the back of the plate with a damp sponge or tissue-paper. This operation will take but a few seconds of time, which is amply repaid by cleaner plates, and holders always in good condition. Place the plate in the holder, and expose as described. The reason for having two slides is to prevent any possible jar either in exposing or closing the picture. The slide of the holder sometimes sticks, and requires some effort to raise or lower. By the use of two slides, the upper one made to draw and close smoothly and rapidly, all danger from jar is avoided.

The exact time of exposure is a little difficult to obtain at first, but a few trials will give sufficient experience to make good pictures. The time which I give upon a bright day is about fifteen seconds. Do not over-expose the positive; that is fatal to clear transparencies; rather err upon the other extreme of short exposure.

The Negative.

Of course it is desirable to have a good negative, as sharp as possible, and of medium strength in the case of portraits and landscapes, but in making copies of engravings I would advise under-timing the negative a little, so that the parts unacted upon by the light may be clear and perfectly free from fog. After fixing, intensify with any chemical that will answer the purpose. Remember that a foggy negative will not make a good transparency. The size is a matter of taste: six and a-half by eight and a-half will be found large enough; but any size can be used by enlarging the boxes. It is not desirable to make the negative too large, if the intention is to make magic lantern positives. Negatives made upon glass five and a-half by four and a-half inches, and reduced to the regular size of lantern slide, three and a-half inches square, will be more satisfactory than larger pictures.

Do not attempt to make very small negatives and enlarge them to double or treble their original size to get the best results. Try always to make the positive smaller than the negative.

The Lens.

Almost any good lens can be used to advantage, but I do not advocate one having a very short focus or a very small diaphragm. Preference should be given to a lens of about eight-inch focus with a stop of quarter of an inch, in reducing from six and a-half by eight and a-half or half-size to the magic lantern slide.

Development.

After exposing the plate, the slides are closed as described, and the plate is removed to the dark room. Develop as usual, but be very careful not to push the development too far. The picture should not flash out upon the plate at once after the application of iron, but appear slowly; judge of its progress by looking through the picture, using a jet of gas turned very low, or a small lamp, for the purpose. As soon as all the detail is out, stop further action by washing well with water.

Care must be exercised to avoid an excess of light in the dark room. Use as little as possible, and do not allow the plate to be heated when developing over the light; keep it moving constantly; fix and wash.

Intensifying.

Should the positive appear weak, and wanting in contrast after fixing, flow over it a dilute solution of sulphide of potassium, which will give tone and brilliancy to the picture. Wash well, dry, and varnish.

The application of sulphide of potassium is mentioned because it is easily prepared and not likely to give trouble, provided that it is not used in the dark room in presence of silver salts. I have used bichloride of mercury for this purpose, but it is unreliable, alone or with after-application of ammonia. Gold is sometimes used somewhat in the form of a toning solution, but it has no advantage over sulphide of potassium. Many positives do not require toning, and are injured by so doing. It is only when the positive wants contrast that toning is advisable.

The Finished Picture.

All the high lights—the sky, for example—in a landscape subject should be perfectly clear glass, unless clouds are present in the negative. Any deposit or stain on the high lights will destroy much of its beauty as a picture for the lantern. In making positives to be exhibited with the lime light or magnesium light, it will be found of advantage to make the picture of decided contrast in light and shade, for the brilliancy of those illuminators is so great that the light cuts through the positive too much should it be wanting in strength, giving a flat picture when thrown upon the screen. With lanterns burning lights of less power, weaker transparencies can be used to advantage.

In varnishing the plate, select a good, clear varnish, well filtered. The finished picture should be protected by a piece of glass of the same size, neatly pasted together on the edges with thin strips of dark muslin or paper, to exclude dust and prevent the danger of scratching. For convenience, keep the slides in a box separated by grooves. Select good glass, free from bubbles or other imperfections.

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COMPETITION FOR MEDALS AMONGST CARBON EXPERIMENTALISTS.

A somewhat unusual kind of competition is projected by Signor Antonio Montagna, an Italian enthusiast in carbon printing. He has issued a circular, of which the following is a translation:—

> The undersigned, being the inventor of a photographic process of printing in carbon, with the view of stimulating the progress of photographic art, offers a premium, in the shape of a silver medal, to his fellow-labourers, to be awarded by a competent and trustworthy judge to the producer of the best photo-engraving or carbon print; and to the second competitor a cast of the same in plaster or type metal.
>
> Conditions.
>
> 1st. The carbon print must be sent, together with the plate from which it was produced, before the 30th March, 1870, to the address of Signor Antonio Montagna, in Mesagne (Lecce), Via Borgo Nuovo, No. 19; and in order to guard against risk of injury during the journey, it is recommended to send either by post or through the agency of the Brindisi railway.
>
> 2nd. The dimensions of the proof shall not be less than ten centimetres by twelve (3·94 × 4·73 inches), irrespective of the mounting-card.
>
> 3rd. At the foot of each illustration shall be written a motto, or some other device, made use of to avoid the indication of the name of its author, so that no suspicion of partiality in the adjudication of the prize may be entertained.
>
> 4th. Accompanying each specimen print there must be sent

a sealed packet, on the outside of which shall be repeated the motto written on the proof, and the name and address of the author.

5th. After it has been decided which of the prints is entitled to the prize, the sealed packet bearing the corresponding motto will be opened, so as to disclose the name of the author, to whom the medal will then be sent.

6th. The authors of the specimens not approved will remain unknown; the envelope accompanying the same will be returned unopened to the post office whence it was issued, where the sender may obtain it on naming the motto on the outside thereof.

7th. All the proofs which shall have been sent will be considered the property of the founder of the prize; they will, however, be sold by lottery, and the net proceeds devoted to the institution of another prize.

8th. The medal will be of silver, measuring four centimetres (1·57 inch) in diameter, and bear on its face the portrait of John Baptiste Porta, the inventor of the camera-obscura, the first instrument of photography. On the reverse the words "Premio Montagna," a space for the name of the winner, and the following inscription:—"Concorso per la Fotografia al Carbone, 1870."*

9th. Neither the inventor of the process nor those immediately employed under him will adjudicate the prize.

10th. The results of the competition will be communicated to the photographic societies, and the particulars will be given in all the photographic journals. Antonio Montagna.

Mesagne, 1*st July*, 1869.

PHOTOGRAPHY AND WAR.

The *Times* gives the following resumé of a recent lecture on photography by a gentleman of our staff, the subject being the military applications of photography:—

"Mr. H. Baden Pritchard, of the General Photographic Establishment of the War Department, read a very interesting paper at a recent meeting of the United Service Institution, on the application of photography to military purposes. The author stated that the first time photography was used in connection with military matters was during the Crimean War, when Lord Panmure, then Secretary of State for War, conceived the idea of securing some photographic records of the campaign. The series of pictures produced, or, at least, a great number of them, were, he believed, stored up at the War Office. There was reason to fear that they would be found on examination to have faded considerably. At the time they were produced the art was still in its infancy, and many of the manipulations exercised were of an experimental character. Since that time the art has progressed to a wonderful degree, and the necessity of diffusing a knowledge of the subject had been so fully appreciated by the authorities of the War Department that a school of instruction had been formed for the special purpose of instructing classes of young soldiers in its details. This school, which formed a portion of the Royal Engineer Establishment at Chatham, and was under the direction of Captain Stotherd, R.E., had been of considerable benefit to the service.

During the recent Abyssinian campaign a staff of photographers, instructed and equipped from this establishment, had been attached to the Quartermaster-General's Department, and had done good service in copying maps and sketches of the route, and in taking pictures of objects and points of interest of which a record was considered desirable. The author then addressed himself for a short time to the applications of the process made practical by the non-combatant portion of the service.

One of the most important uses to which the process was applied was the copying of maps, plans, designs, and rare MSS., as practised at the Ordnance Survey Office, Southampton. In this establishment the process of photo-zincography, the invention of Colonel Sir H. James, R.E., had been carefully elaborated, and had been employed with such unequivocal success that the Governments of France, Prussia, Austria, Belgium, and America had adopted it with more or less modification. In addition to the multiplication of special maps for warlike purposes, valuable service had been done in the establishment at Southampton by the reproduction of rare and curious MS., facsimiles of the Great and Little Domesday Books, bound up in thirty-five imperial quarto volumes, and also of the national MS. of England and Scotland, without the necessity of tampering in any way with the originals.

At the general photographic establishment—a branch of the chemical department at Woolwich, under the direction of Professor Abel F.R.S.—the camera was employed in many ways. All experimental structures, such as shields, guns, small arms, waggons, or rockets, were photographed. The results of firing experimentally against iron plates of different thicknesses were reproduced; pictures for purposes of instruction, showing the method of working guns of different descriptions, and the positions taken up by individual gunners on the issue of various orders, were taken, photographs exhibiting the regulation mode of wearing accoutrements, the precise manner in which the harness of horses should be adjusted, the method of packing waggons and fitting service saddles, and the mode in which military tents and equipages are set up, were also included in the collection of the institution. Prints from the negatives were issued to various departments of the army, both in England and India. Photography could be usefully and economically employed in the construction and preservation of patterns at Woolwich and other manufacturing stations.

Returning to the subject of the employment of photography in the field, he said that the avowed purposes for which the art was used in that case had been for reproducing and copying maps and plans, and taking pictures of important localities and interesting objects. In discussing the importance of this part of the system, he said that during the Abyssinian campaign as many as thirty copies had been prepared and distributed to brigadiers and others within twenty-four hours after the original plan of certain places had been sketched. He thought it advisable that copies of field maps intended to be of a lasting character should be printed on linen, cambric, or silk. He recommended that landscape views should be taken, not only on account of the particular interest they possessed as such, but also on account of their value to an army in the field. Sketches of an enemy's position might be obtained at a considerable distance without much risk of danger. He himself had obtained a picture of a building two miles distant from the camera. The camera might also be used as a theodolite, and the distance between the reconnoitering party and the enemy's position accurately and rapidly determined, supposing the actual dimensions of the enemy's fort or entrenchment to be known. The camera might also be used in the production of landscape pictures to illustrate the ground plan or sketch of route. He then explained the manner in which these field pictures should be taken, and the advantages accruing from their existence. The progress of works might also be ascertained by means of photographs, and this system of ascertaining the rate at which works were proceeding had been adopted by several firms of contractors. The remainder of the essay, which contained several novel and interesting suggestions, was occupied with a discussion on the respective values of different kinds of plates used in photography, and on the methods of preserving pictures taken by means of the camera. At its conclusion a cordial vote of thanks was passed to Mr. Pritchard for his elaborate paper."

The following letter, supplying an omission, has since been published in the *Times*:—

In reference to the report of my lecture at the Royal United Service Institution on the above subject in your impression of the 13th inst., I shall feel much obliged it you will permit me to supply an omission which, although of an apparently trivial nature, is, nevertheless, of some considerable inportance in connection with the subject in hand.

Referring to the multiplication and printing of military maps and plans in the field by means of photography, for distribution among Staff officers, the report states that, to be of a lasting character, such photographs are recommended to be printed upon linen, cambric, and silk, instead of upon paper. Now, although permanence is an essential quality in pictures of this description, still simplicity and rapidity of production are far more important, seeing that large numbers of copies are required in as short a time as possible.

By printing upon a densely-woven linen, prepared in a manner I have described, the advantages secured are very great over those of paper; the fabric prints more quickly, is capable, owing to its open structure, of more rapid and perfect washing (the most important operation in photography), and, finally, needs no subsequent mounting upon a flexible material, as is the case with paper maps. Thus much economy of manipulation is effected, a matter of some consideration when performing hurried operations in the the field.

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* At the head of the circular is a woodcut illustration of the proposed medal.—Ed. P. J.

I have the honour to be, Sir, your obedient servant,

H. BADEN PRITCHARD.

General Photographic Establishment of the War Department, Woolwich, August 14.

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ON THE PRODUCTION OF SOLAR NEGATIVES.

BY GEO. H. FENNEMORE.[*]

The only process which is suitable for the production of negatives from which enlarged pictures are to be printed is the wet collodion process; the greatest transparency and a total absence from all fog being the real requisites of all negatives intended for enlargements. To produce a good solar negative, then, two things are needed:—First. A very thin glass and of a uniform thickness, because the heat of the sun, being concentrated upon the negative, is much more likely to break it if it is thick and unequal, than it is if the glass be thin. Procure, then, a good sample of thin glass, as free from bubbles and other inequalities as possible. This is much better than plate-glass, which is very apt to break when exposed to intense heat. Second. The chemicals should be in the best possible condition for making negatives of the greatest brilliancy and transparency. Too much attention cannot be given to this matter, for the reason that, in the camera for enlarging, the sun's rays ought to freely pass through the negative, or there will be extreme heating of the glass, which will most likely break it; and not that only, but it has the bad effect of requiring double, and sometimes triple, the amount of time necessary to print the enlarged proof according as it is more or less fogged.

To obtain this extreme transparency of the negative your collodion, silver bath, and developer should be in good condition. Any of the above are good if they produce good results in the ordinary negative process; therefore to give any formula here would be useless, but the following hints, if carried out, will be of much more importance:—

First coat the plate with collodion and leave it in the bath only long enough to properly coat it; and, instead of shortening the exposure (as is usual with many operators), expose a little longer than usual. This is easily explained: for if you expose barely sufficient, the developer would only bring out the detail in the shadows after it had been on some time, thereby increasing the tendency to fog, as well as producing too great a contrast between the opaque and transparent portions of the negative; whereas, by giving a longer exposure, the image at once appears in the shadows as well as in the high lights. After exposure the plate should be well flooded with the developer, which should be allowed to run off, carrying all the free nitrate of silver with it. The image immediately appears, and the moment the details show themselves in the shadows it should be plunged under a copious stream of water and well washed, after which it is fixed with cyanide of potassium (not hypo).

Next to good chemicals the main success is due to operating quickly. The negative, when dry, ought barely to allow the detail in the shadows to be seen, and the lights ought to be sufficiently feeble to allow you to read through them; still it is better to allow it to be a little too intense than too feeble, for, if the latter, the lights in the enlarged prints will have a flat and dirty look to them. Above all things avoid fogging. Solar negatives should not be varnished, as it destroys the uniformity of the film, and sometimes the whole beauty of the print. Great care should also be taken that no light enters the enlargement room but that which passes through the solar instrument.

(*To be continued.*)

SPIRIT CARTES DE VISITE.

Punch has the following:—Does anyone want proof that the Invisible can be photographed? Here it is, then—plain as a pikestaff:—

> "In a recent notice of the Mumler photographs, poor *Punch* made one of his splendid misses with his baton. The tenor of it was that nothing can be photographed which is not visible to the naked eye; that ghosts are not visible to the naked eye, therefore, &c. Now, it is well settled that the plate is more sensitive than the eye, and it is, therefore, an unfortunate instance for *Punch* to show his wisdom upon. The magnetic or odic lights, which Baron Reichenbach photographed, are evidences of this."

Are they? Baron Reichenbach got a photographer to shut up a magnet, turned towards an iodized plate, in a case kept in perfect darkness for sixty-four hours. "Taken out in darkness and exposed to mercurial vapour, the plate now exhibited the full effect of the light which it had received, over the entire surface." Reichenbach adds, "It was clear from this, that unless other causes are capable of affecting the photographic plate after considerable time, it, in fact, *must be light, real, though weak and acting but slowly, that issues from a magnet.*" Italics original. Is the impression obtained in the manner above stated, one of the "evidences" referred to by the *Spiritual Magazine*, as demonstrating the possibility of photographing an invisible ghost? We should like to see the others.

By the accounts of spirit photography, it takes no more than ordinary photographic time to photograph a ghost. And the ghost is photographed in daylight—but, according to the *Spiritual Magazine*, not thereby; not by daylight, but by odic light. The chemicals are decomposed by rays of daylight reflected from the sitter, and at the same time by rays of odic light emitted by the ghost. Optics and Chemistry! Said odic light is too faint to affect the eye; nevertheless affects the plate as quickly as the daylight does, and that in broad day. No need for the odic ghost to be shut up for sixty-four hours in the dark.

In order that spirits may "levitate" a Medium, or stretch and shrink him, or write, or draw, or play the accordion, or send banjos flying about your ears, they insist upon darkness—that is, the Medium does for them. A dark *séance* is *de rigueur*. But they don't want darkness as a condition to being photographed. That demand would be reasonable; indeed, consecutive. The odic ghost should require darkness to shine in it, like the odic magnet. But just where darkwould, *ex hypothesi*, be requisite for a spiritual manifestation, the spirits that manifest themselves—photographically —can do without it. And don't they do?

How can they do otherwise than spirits still in the flesh? One understands, indeed, that such spirits can, apart from the magnesium light, or the lime, or electric light, only be photographed by sunshine, though, considering that they are Yankee spirits, attendant on a Yankee Medium, and constant enough in their attendance to enable him to do a regular business with confiding, but possibly through co-operative Yankee sitters, one may venture to suggest that their photography in effect is moonshine.

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MELANCHOLY SUICIDE OF A PHOTOGRAPHER'S DAUGHTER WITH CYANIDE.

A suicide of an unusually painful character occurred last week at Folkestone. A young lady, Ellen Norah Annie Weston, daughter of Mr. Jasper Weston, of the firm of Weston and Son, well known as respectable photographers, took a dose of cyanide on Tuesday evening, which, in half an hour, proved fatal. She was an intelligent and accomplished girl, and no satisfactory cause can be assigned for the sad act. We condense from a local paper, the *Folkestone Observer*, an account of the facts as disclosed at the inquest the following day.

On Wednesday evening an inquest was held in the Town Hall, Mr. E. W. Major, foreman of the jury, when the following evidence was taken;—

Joseph Weston, photographer, identified the body as that of his daughter, Ellen Norah Annie Weston, aged sixteen years and four months. Was out in the evening previous, and when brought home his daughter was lying on the sofa insensible. The deceased was a girl that read a great deal, and had great capabilities of mind. He had a large library, and the deceased had expressed her intention to read the whole of the books. There had been no disagreement whatever, she being very attentive, and having performed the whole ot her duties in every respect. In his business he used cyanide of potassium, which he kept in the dark room of the glass house, where he used it. The bottle is never removed from that place. Deceased had no business in the dark room or with cyanide; her duties were in the house and printing room. He did not lock the dark room up, but locked the glass house door. She had been out at about four o'clock that afternoon to prepare herself for confirmation, and later in the evening she took lessons in music from Miss Spearpoint.

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[*] *Philadelphia Photographer.*

In reply to questions from the coroner and jury, Mr. Weston said he did not notice anything different from deceased's usual manner during the day. She appeared to be very joyful and happy. The glass house was locked immediately on deceased leaving it, before he went on to the Lees. He put the key on a shelf in the workroom, which was at the back of the shop. There was nothing to prevent her from getting the key.

Dr. FitzGerald said: Yesterday evening, between half-past nine and ten o'clock, I went to see the deceased at her father's house in Guildhall Street. I found her on the sofa in the sitting room. She was then insensible, with her eyes very much dilated. I was told that she had taken poison, and the symptoms corresponded exactly with what would have been caused by taking cyanide of potassium. I may mention that it is very similar to prussic acid. I administered a stimulant, and immediately went for a stomach pump. On returning I found her still more gasping, and her pulse fluttering. I proceeded to use the stomach pump, after which I washed the stomach out with some warm fluid. I found the symptoms still increasing, and to make sure I sent for Mr. Bateman, who arrived shortly after. We continued to use the stomach pump until the girl was dead. I have not the slightest doubt that the cause of her death was her taking a quantity of cyanide of potassium. From a subsequent analysis I found that the deceased must have taken a very large quantity—enough to have killed several people. I have no doubt the poison was taken in a solid lump, for if it had been taken in solution it would have acted more quickly, and insensibility would have come on immediately; but as it was, the poison took time to dissolve, and as it did so it took effect upon her. Dr. FitzGerald then exhibited the first and second rinsings of the stomach, pointing out the difference in their colour and clearness; he also showed to the jury a small box of cyanide.

In reply to questions by the jury, Dr. FitzGerald stated that the poison would act as soon as it dissolved, which would be in about two or three minutes, and then it would take effect. In the present case the poison could not have been taken more than ten minutes when he arrived. It was about half-past nine or a quarter to ten when he arrived

Emily Weston, sister of the deceased, after some preliminary details, said: Deceased called out, "Emily!" I went to the door, and said, "Did you call?" and she said, "Come! come! I am dying." I rushed up stairs to the bedroom where deceased and I slept, and saw the deceased walking, I think, towards me. She said, "I am dying!" I said, "No, not dying; you are only ill." She then said, "I am poisoned!" but I did not believe her, and said, "Surely not!" and deceased said, "Yes I am, with cyanide." I said, "What did you do it for?" and she said, "I don't know why I did it. I felt so wretched. I must have been mad. O, Emily! I am so sorry; I am so sorry now." She repeated her sorrow several times. I then took her down stairs and laid her on the sofa. When I went into the bedroom the deceased was partly sitting and partly standing, but I think she seemed to fall on to a box that was in the room. When I offered to lead her down stairs she said, "I cannot," or something to that effect. I succeeded in getting her down stairs. I believe she was insensible when I laid her on the sofa, as she made no reply to what I said to her. I then ran to Mr. Tucker's, and asked him to go for Dr. FitzGerald. I did not see deceased go into the glass house at all. Since her mother's death deceased had appeared altered, and very quiet, and more serious. I have no idea what caused her to commit the act. She always seemed happy, but quiet. There was a great attachment between my mother and the deceased. I have not heard that my sister was engaged to any one. She was very excitable, and read a great deal. There was nothing said by deceased that would lead me to suppose that she was going to commit such an act.

Dr. FitzGerald said that three grains of this poison would kill a man. It might have been that deceased did not know that so small a quantity would cause death.

Frederick Jasper Weston, brother of the deceased, after giving some details of the half hour preceding the act when he left the house, said he had found a piece of cyanide outside the window of her bedroom that morning. He had not missed any of the poison before. They purchased the cyanide of potassium by the pound.

The jury returned a verdict of temporary insanity.

Correspondence.

PHYSIOGNOMY IN THE STUDIO.

Dear Sir,—As a public writer, well experienced in the difficulties that beset efforts at literary composition, you will, doubtless, endorse my opinion that the weakest point in the English language consists of that poverty which compels lexicographers to apply a plurality of definitions to words. Certainly a writer, by a tedious process of circumlocution, is enabled to convey his ideas on to paper with tolerable accuracy; yet occasions will arise when, for reasons I have hinted at, his meaning cannot escape mis-construction, and, in such cases, interpretation follows an excusable rule of error. "X. Y. Z." and Mr. Cocking have, in your last issue, provided a forcible illustration to support my responsive arguments. Both of those correspondents have taken me severely to task on the question of "flattery;" but I would have them remember that a skilful warrior who battles under the banner of either Mars or Mercury would scarcely be worthy the name of tactician if he omit taking an exhaustive view of his position before the first shot of defence is fired. Now, had "X. Y. Z." and Mr. Cocking observed this precaution, they would have acted more cautiously in their review of the active verb to flatter. *Flattery*, condensedly defined, implies to praise falsely, to soothe, to adulate; but we should not stop here. If we extend analytical research through the mazes of the definitions I have quoted, it will be found that their subtle and varied ramifications form the main arteries of social intercourse; that flattery is the verbal lubricator that smooths the way of communication, and enables expressed ideas to flow, free of offence, from man to man.

Examples: gratitude is a virtue, yet its expression involves *flattery*; courtesy is a necessity, its observance is strict *flattery*; to rejoice at a friend's good fortune, or to mourn with him in his hour of agony, both come within the meaning of *flattery*; conciliation often embraces important issues, yet that powerful engine cannot move on any road but that of flattery. And so I might follow up my argument with proofs *ad infinitum*, for it should be understood that harmony in an intercourse with those around us can only exist as long as the chords of sympathy within us are held free from the jarring irritation which would at once set up discordant vibrations if, for an instant, the soothing of flattery in its every shape was withheld. And this summary of itself affords evidence sufficient—which I trust my friends "X. Y. Z" and Mr. Cocking will receive as convincing proofs—that the kind of flattery I would deal out to Mr. Pompous Dignity has been so far misunderstood by them that it reflects but little credit on their powers of discrimination, otherwise they would scarcely read, in the lines of Pope I quoted, that to teach wilful humanity, recourse must needs be had to means which would prove nauseating and revolting to all but actual fools.

If I might be permitted to extract evidence from the world of politics to support my case, I would refer to a very recent and an important period, which will doubtless find a prominent place in the annals of England. I allude to that memorable division which took place in the House of Lords, that in effect foreshadowed a national crisis; and those among your readers who take an interest in politics, in common with myself, know that the opposition was more of wounded dignity than of principle. Does "X. Y. Z." suppose that the ministerial salve of conciliation subsequently applied to the tempers of the sage peers consisted of grovelling, sneaking, or snivelling? I trow not. Yet the historical truth is placed upon record that the House of Lords yielded to conciliation, which, as I have shown, is an offshoot of flattery. But, to come to the practical, which "X. Y. Z." loves so well when it is spiced with "shrewd observation." In the execution of my modified comedy, I purpose drawing Mr. Dignity, as dressed up by "Protogoras," to the front, and in my dealings with him I shall, as far as it is possible, use the formula recommended by our *really clever friend the artist*.

It will, doubtless, be remembered that Mr. Pompous Dignity does not wish to stand. He likes his own way, and will have it. The obliging operator is willing to let his troublesome patron enjoy his dignity; but the consent is qualified with an avowal that, of course, he (the operator) has also an *opinion* of *his* own.

At this point I pause, in digression, to note how "X. Y. Z." and Mr. Cocking beg the question in making Mr. Pompous Dignity as pliant as india-rubber in the hands of the skilful and celebrated operator. I apprehend that all skilful men do not enjoy celebrity. And I am of opinion that Mr. Pompous Dignity would not move beyond the limits of the town in which he resides in quest of celebrity or skill. I think common sense is right when it whispers in my ear, in reference to this matter, that Mr. Dignity is more intent on supporting his own opinion than in hunting up celebrity, to perpetuate his figure and features.

But I pass on. The operator whom "X. Y. Z." doats upon has an opinion, and, in my opinion, goes to work in a very clumsy way to get it. Were all as pliable and sensible as "X. Y. Z." the results under the circumstances would be satisfactory, doubtless; but Mr. Pompous Dignity has a deal of self-esteem, and can see it if others on whom he confers patronage pretend to a superior knowledge.

After the manner and custom of the dramatic writer, I now write. Scene: a photographer's studio; operator in waiting. Enter Mr. Pompous Dignity, followed by his two daughters, at whose instance he desires his portrait taken. Mr. Pompous Dignity, authoritively: "I do not wish to stand. I want to be taken sitting. You can take me sitting, can you not?"

Operator, respectfully smiling: "Certainly, sir; and I make it a rule, in the treatment of my patrons, to grudge no pains in making them appear as they would be seen by their friends. Therefore, before you finally decide on a sitting position, I should like you to observe the effect as I sit on the chair. (Operator sits down, and Mr. Pompous Dignity, much interested in the proceeding, looks wise.) Operator continues a gentle joke on the advantages of superior rotundity, &c., admissible if Mr. Dignity is mollified and can bear it. Operator proceeds, courteously, "You observe, sir, that when a person is inclined to be stout," &c. (See explanation by "Protagoras," page 365, second column.) Mr. Pompous Dignity sees through the matter at once (at that moment he would see a volcano in the sun if the operator facetiously points), so he has a whispering conference with his daughters. They give the nod of unqualified approval, and, whilst all are in the highest of spirits, self-will is thrust aside *pro tem.*, and the operator has the game in his own hands.

Now, sir, I ask any candid reader whether the self-respect of my operator has been damaged by the judicious course he has taken in overcoming a no slight amount of difficulty? I ask whether abjectness that deserves to be kicked has been practised? I inquire whether dignity and manliness have been compromised? If one might turn head over heels to babies, surely a little bending before human weakness is admissible! Acting on this principle, my operator soothed by conveying his thoughts suggestively, rather than risk offending by thrusting them direct; in short, he entered into the spirit of Pope's lines, and "taught Mr. Pompous Dignity as if he taught him not."

In conclusion, with reference to "X. Y. Z.'s" opinion on digressive and inflated reflections, I freely confess that by way of relaxation from the weariness of study I sometimes give free rein to the thoughts that rush unbidden on my mind. At the best of seasons an active mind is a difficult subject to bridle, and the world cannot abide any deviation from the orthodox course that fashion marks out. Thus the thoughts of an earnest student of nature are idle and inflated dreams, and the highest and grandest flights of the poet become madly rhapsodical. Despite these impediments, human nature forces every kind of mental activity to operate on its own level. An approaching ship is visible from the cliff long before she shakes from her sails the mist that conceals her image from the watcher on the sea-washed shore, and it is satisfactory that this rule figuratively applies to men and their understandings. I would not exchange for all the world can give the pleasure I derive from occasional glimpses of the leading strings which govern the histories of humanity.

On this question of Physiognomy in the Studio I write (as far as I am concerned) Finis!—Yours truly,

W. T. Bovey.

PREVENTION OF SURFACE MARKINGS.

Dear Sir,—I have read lately several complaints of stains and markings on the excited plates during the warm weather, and which have been attributed to contact with the dark slide. Now it occurs to me that this may be completely obviated by a very simple contrivance, viz.:—Bore a hole in the centre of the door of the dark slide, and insert a pneumatic holder, so that the surface of the india-rubber disc may project inwards just so far as to bring the excited surface of the plate, when attached, into focus. The ball would, of course, be outside the door, and there would be no difficulty in attaching the plate in the usual way. By this plan there would be no possibility of stains arising from contact with the slide.—I am sir, yours truly,

Cheltenham, 17th August, 1869. Baynham Jones.

Talk in the Studio.

Photographic Caricature in Paris.—A daily contemporary says:—"One of the ready-made clothing shops on the Boulevards has been presenting its customers with a photographic group of the nine Deputies of the Seine. M. Garnier-Pages has taken offence at this, because he is represented in a Dundreary *pose*, with a huge eye-glass disfiguring his intellectual face, and intends to take proceedings against the proprietor of the establishment for not asking his permission before adopting this singular puff." It has, we understand, been decided that offensive caricature constitutes a libel.

Photo-zincographic Reproduction.—Sir Henry James has received orders to copy the Black Letter Prayer Book, 1638, with his marginal MS. notes, by his photo-zincographic process. One hundred copies of this Prayer Book will be printed for the Ritual Commissioners, and sold by them.

Photographic Identification.—Some four weeks since the dead body of an unknown man was found on the beach at New Brighton, and, before it was buried, a photograph was taken and circulated by the police. On Friday a person called at the police office, Hanley, Staffordshire, to give information that Elijah Sutton, of that town, had not been heard of since he went away, a month ago, for the benefit of his health. The sergeant in charge, remembering the carte, produced it, and the person depicted thereon was at once identified as the missing man.—*Liverpool Albion.*

Correlation of the Unequal Visibility of Colours at Twilight, and their Unequal Photographic Activity in Full Daylight.—M. Keller, in the *Comptes Rendus*, observes that, after sunset, those colours which are the brightest when seen by daylight, become very dark—for instance, red, orange, and yellow; while blue, violet, and indigo, which are less bright when seen by daylight, become whitish (*blanchâtres*) in twilight. The author further observes that, in a photographic print, the first-named colours produce black, and the last-named grey. White light, producing all vibrations, is capable of exciting all colours; but, since, according to the researches of the Rev. Father Secchi, S.J., the light of the sky after sunset is especially rich in blue rays, it need not excite astonishment that the less refrangible rays should be, as it were, extinguished.—*Chemical News.*

Formula for Spirit Photographs.—Mr. D. D. T. Davie gives, in *Humphrey's Journal*, the following method of obtaining "spirit photographs":—"Select a very soft sample of glass, and make on it a negative of some spirit (say Benedict Arnold or Jeff. Davis, or any of our strong-minded women), and develop it with a weak solution of protosulphite of iron. Without washing, redevelop with bichloride of mercury until the high lights are as black as midnight; wash lightly, and flow the negative with a feeble solution of aqua fortis. Let this remain on the plate five minutes or more, then wash well and place the negative in strong sunlight to dry, to be left exposed to the light from six to ten hours. As soon as the plate is thoroughly dry, place a white paper behind it, so as to increase the strength of the light. Having got thus far, soak the film off in a feeble solution of concentrated lye. As soon as the film slides off, wash the glass under a stream of water, and stand it up to dry spontaneously. The plate is now ready for a second impression. The ghost is etched in the glass, and all you have to do is to look until you see it; it may require a little imagination, but whether you see it or not, real or imaginary, the ghost is there, and will reappear when another negative or impression is made on the glass. By-the-bye, I once got hold of a lot of glass very peculiar in its quality; in making negatives on it by ordinary means, every impression made was completely etched in the glass, so that I have seen as many as three ghosts and one genuine impression on the glass at the same time. I called them ghosts at the time, but nowadays they are called spirits. I have had the same results thousands of times with the Daguerreotype plate."

To Correspondents.

Printer Wanted.—In reference to a recent advertisement for a printer, applications to be made to the Editor of this Journal, we beg to state that a large number were received and duly forwarded to the gentleman on whose behalf the advertisement appeared. The Editor finds it impossible to reply personally to all those who asked for an answer.

J. W. H. A.—You will find the spot appear when you are exposing on dark or imperfectly lighted subjects when there is also a mass of sky, or more especially where the light is behind the subject, and therefore enters the lens freely, whilst it illuminates the subject imperfectly. As a rule, also, the longer the exposure on such subjects the greater will be the risk of the central spot of light. To prevent its occurrence, avoid, if possible, taking a subject "against the light"; that is, with the light behind the subject, and therefore entering the lens freely; next place the stop as near to the lens as justice to the subject will permit; also shade the lens as much as possible, during exposure, from the light of the sky.

A Young Hand.—As a rule, the specific gravity of silver solutions which have been used does not constitute a safe guide as to their strength. The accumulations of other nitrates—such as those of potash, ammonia, cadmium, &c.—as well as other contaminations, combine to render the indications of gravity useless as a means of estimating the silver present. For new nitrate of silver solutions, however, the indications are safe. According to the valuable table calculated by Mr. Dawson, a solution of thirty grains to the ounce possesses a specific gravity of 1059; one of thirty-five grains, a specific gravity of 1069; and one of forty grains, a specific gravity of 1078. The temperature, of course, modifies the result, the specific gravity here being calculated for 60° Fahrenheit.

E. H.—The metallic silver stains which are under the film almost invariably arise from dirty plates, or dampness on the plate before applying the collodion. Sometimes it will appear with one sample of collodion, and not with another, even when similar plates are used. The reason is, that a thin collodion requires a much cleaner plate than a thick collodion. A tough collodion of good body will often ignore a dirty plate, whilst one giving a more delicate film will yield stains wherever the slightest dampness or want of perfect chemical cleanliness exists on the plate; but you may rest satisfied that the metallic silver stains under the film, which cause the film to break up during varnishing, or soon after, are caused by dirty glass.

P. M.—The reticulation of which you complain is doubtless due to excess of water in the collodion, the spirits and ether not having been sufficiently highly rectified. Some samples of pyroxyline tend to produce reticulation, but the defect is most commonly due to water in the solvents. We cannot suggest a remedy.

B. M. L.—If simple remedies will restore a nitrate bath, it is, in our estimation, always worth while to try them. We cannot, under any circumstances, endorse the advice of your crotchetty friend, to throw the faulty solution down the sink. If it resist sunning and permanganate, throw it down—not the sink—but as a chloride, and recover very nearly its full value amongst your residues.

R. L.—It is somewhat difficult to answer your question as to whether it is better to buy collodion or to make it. Almost everything depends on your skill and experience in making; and if you had possessed much skill and experience, you would scarcely have needed to ask the question. In your case, the probability is, that it is decidedly better to buy it, especially as there are many excellent samples in the market. The question as to the best proportion of bromide we can only answer as we have answered before, as it is one on which various opinions are held by good authorities. It is very much affected by the purpose of the collodion, the kind of pyroxyline, the kind of iodides used, &c. For dry plates, moreover, as a rule, much more is desirable than for wet plates. We employ, as a rule, for wet plates, a collodion containing from half a grain to a grain to the ounce of collodion. If we had to deal with great contrasts in which we desired to secure harmony and softness, we should use from one and a-half grains to two grains. With two grains, or upwards, we should call the collodion highly bromized. Excess of bromide reduces contrast, and at times renders it difficult to secure vigour, but it aids in securing softness. We should rarely exceed one grain of a bromide to the ounce for portraiture, unless we had especial contrasts of colour to render; but even then, full exposure and rapid development, with the proportion named, would generally answer.

F. A.—Various washing machines answer very well; but the best principle of washing is not that which merely keeps the print in running water, in which continuous change, but never complete change, is effected. Lifting the prints singly out of the washing water, draining them well, and placing them in fresh water, and keeping up this change for many times in succession, forms the most efficient method we know. Lifting the prints from the water and placing them in a tolerably even pile in a press which will drive out all the water, and then returning singly to a dish of fresh water, answers well. Long soaking is not, in our estimation, desirable. 2. The maker can give you fuller information on the subject than we can do.

M. C.—You can see a variety of specimens of carbon printing at the gallery of the Autotype Company, No. 5, Haymarket. We cannot tell you where you can see specimens of Pouncy's oil process—probably at Tweedie's, in the Strand. So far as we have seen, the results are less delicate than Swan's or Johnson's; but we think it is capable of results better than those we have seen. We do not agree with your statement that patents have been the bane of carbon processes; on the contrary, without the incentive of the patent law, the progress would not have been nearly so great.

M. S. D. (Driffield).—The removal of the albumen from the sample of paper you enclose is due to the weakness of the silver bath, which has, doubtless, become impoverished by use. The argentometer is never a safe guide for the strength of an old bath. You should always replenish the bath in proportion to the amount of paper excited, adding at the rate of an ounce of nitrate of silver for each quire of paper printed.

J. Y.—We prefer No. 1 on your list for the purpose stated.

Grey Print.—A dingy print with discoloured lights was forwarded to us in a letter which has got mislaid. The cause, however, of the discolouration is imperfect fixing, from the use of an old and exhausted fixing bath, or from too short immersion, or the use of a very weak bath.

⁂ Owing to the absence of the Editor from home, attending the meetings of the British Association, answers to many letters are unavoidably postponed.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

THE PHOTOGRAPHIC NEWS.

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ALKALINE CONDITIONS IN WET AND DRY PHOTOGRAPHY.

The announcement of a method of working the collodion process so as to secure much greater rapidity than is obtained with ordinary wet plates was sure to excite some interest amongst photographers, and the half-crown pamphlet in which the details of the process were promised was certain to find some purchasers. It is to be regretted, however, that the full details are not given in the pamphlet, and that the photographer desirous to try the process cannot do so without purchasing a peculiar collodion, made by a firm duly indicated, in accordance with a formula devised, but not stated, by the author. The principles upon which the new mode of working is based—or, at least, the author's view of them—are, however, clearly set forth; and on the statement of these principles, and on what has been previously done in the same direction, we shall make a few remarks.

Mr. Sutton commences with the statement "that from the very first a wrong principle has been pursued in taking the negative." The statement is a startling one; but, whilst it demands serious attention, it will require strong evidence to obtain credence. The rare excellence of the results of the ordinary wet process, and the certainty and rapidity with which they are obtained by skilful men, are potent arguments against the idea that there is anything radically wrong in principle in that process. Nevertheless, no method can be so perfect that something better may not be desired; and if greater simplicity or certainty in operating, or greater rapidity in exposure, or excellence in result can be obtained, intelligent photographers will accept the boon with thankfulness. The alleged error in the present system is, that acid conditions prevail. The collodion is acid, or contains free iodine, which is equivalent; the bath is acid; the developer is acid. In the proposed method the collodion and bath are neutral, an alkaline coating is applied, and an alkaline developer employed.

The use of neutral collodion and nitrate bath, and a developer with the smallest possible proportion of restraining acid—sometimes, indeed, none—have been generally recognized as most conducing to sensitiveness; and, under some circumstances, the statement of Mr. Sutton, that "the more you acidify your bath the less sensitive the plate becomes," is true. But this is not in all cases true, and in proposing to supersede an established mode of working it is necessary that all the conditions should be well considered. It is well known to practical photographers that when a collodion containing bromide is used, a considerable amount of free nitric acid may be present in the bath without producing any appreciable retarding action. Nay, further, the presence of a large proportion of nitric acid is made a condition of rapidity in some of the most rapid processes. Col. Stuart Wortley, one of the most accomplished and skilful of amateur photographers, whose large instantaneous photographs are perhaps, as a series, the finest pictures of the kind which have been produced, in describing his instantaneous process, states that he adds from two to three drops of nitric acid to every ounce of a thirty-five grain nitrate bath, using a bromo-iodized collodion containing not less than two grains of bromide to the ounce. In an old collodion positive process, which gave instantaneous results, a still larger proportion of nitric acid and solely bromized collodion were used. Whilst, therefore, it is accepted, as a general rule, that acids act as retarders, it is important to bear in mind facts like those we mentioned, when it is alleged that the use of acid involves a radically wrong principle in the wet collodion process.

In the dry processes, alkaline or neutral conditions have for the most part been found conducive to rapidity, but not universally so. In Mr. Gordon's gum-gallic process, for instance, iron development permits as short an exposure as alkaline pyro development, the latter having been given up as less perfect in result than the former. As a rule, however, alkalinity has been favourable to sensitiveness in dry plates, and various processes have been tried for many years in which this condition has been involved. The first, so far as we know, was the modification of the Fothergill process, published by Mr. Hannaford in the spring of 1861, in which a solution of albumen and oxide of silver, redissolved by ammonia, was used as the preservative. This method has been revived of late years as a novelty. The next was the process of the Rev. Lawson Sisson, published in our pages in the same year. In this process the preservative employed was a solution of gum and biborate of soda. With both these processes, however, the ordinary acid development was employed. Nevertheless, with the latter, using iron development, we obtained plates nearly as sensitive as those by the wet process, and in one comparative experiment we found a plate so prepared was fifteen times as sensitive as an ordinary tannin plate. The next step was that of Mr. Bartholomew, the most important and definite, because in it were distinctly recognized the importance of alkaline conditions. Describing it, in January, 1863, and pointing out the new principle involved, we remarked:—"For the most successful operations with wet collodion we require the absence of organic matter, acid reactions of bath, and the presence of free nitrate of silver. In the dry process proposed, the absence of free nitrate of silver, the presence of organic matter, and alkaline reaction, are laid down as the bases of success." Very singularly, also, the preservative Mr. Bartholomew used then was precisely the same thing as Mr. Sutton uses now; namely, gelatine and carbonate of soda. This process gave a degree of sensitiveness scarcely inferior to that of wet collodion; indeed, we have used the plates for portraiture, and obtained good results with the same exposure as for wet plates, using plain pyro for development, without acid or silver to bring out the image, alkaline development being then unknown. In this latter experiment, however, there was an absence of all acid, all the conditions being neutral or alkaline. Then came the methods of alkaline development introduced by Mr. Leahy, and carried out by many others; but, oddly enough, although the alkaline principle was thus decidedly recognized, it did not come into general use.

Mr. Sutton is in error, it will be seen, in announcing his method as involving a new principle. The principle was not unknown, although it has not been extensively or completely applied. He is in error, also, when he states that in the ordinary wet process "there is no such thing as development proper," "the whole negative, from first to last, being built up by the precipitation of silver from the developer." This error is not uncommon. Mr. Hardwich states that development without free silver is impossible. We many years ago, however, refuted this error. In 1861 we read a paper before the North London Photographic Society, on Development without Free Nitrate of Silver, when we recorded experiments with a variety of dry plates and with a perfectly washed wet plate, in all of which we developed the image, after exposure, by use of a plain solution of pyrogallic acid without silver. The principle we conceived to be an important one, and remarked that "development proper was effected before the accumulation of intensity began, the attention being devoted to one thing at a time, and facility afforded for having each part of the process under complete control." Mr. Sutton, we notice, attaches equal importance to this fact in connection with his proposed process.

That which is new in Mr. Sutton's process is the combination of parts, and their application to wet-plate work. He uses bromized collodion with no iodide whatever, an eighty-grain neutral silver bath, and applies to the film, for use whilst wet, a solution of gelatine and carbonate of soda, finally bringing out the latent image, which he states to consist of an "organic oxide of silver," by means of alkaline development. If the combination proposed be found to effect all that is claimed for it in this pamphlet, the absence of strict novelty in principle will be a matter of small importance. We fully endorse Mr. Sutton's remark to the effect that "a complete revolution is sometimes effected in photographic operations by apparently a very slight change in the materials used and the mode of using them." The practical result is the point of importance. No matter how slight the change made, if it issue in success, and introduce a distinctly improved result, it is a boon to be estimated by the amount of that success and improvement. In proportion, however, to the success, it becomes a matter of interest to trace the steps of progress, and recognize gratefully every one who has initiated or given impetus to such progress.

The value of the process remains to be tested by experience, and in the hands of practical men. In speaking of being more rapid than the ordinary wet process, it is important to know what is meant by the ordinary wet process, and by whom worked. We know a case in which a great dry-plate pretender, who speaks of his dry process as more rapid than wet, when asked how he worked the wet, replied that he had not worked it for years. It was evident that his dictum as to comparative rapidity was not of much value. If a great gain in rapidity be really secured, however, without counteracting drawbacks, the process will be valuable for many purposes, notwithstanding the extra trouble involved in thorough washing and recoating the plate before exposure, and the admitted slowness of development. The chief cause for regret is the fact that the collodion is a special thing, obtainable only in one quarter, because that fact tends to restrict experiment and practice, by which alone the value of the process can be tested. If the non-publication of the formula be for the purpose of securing a monopoly of profits, the matter will eventually remedy itself if the process be of any importance. Photographers will, of course, form their own estimate of its propriety; but the author is clearly as much at liberty to decide his own mode of recouping himself as photographers are to form their opinions on the subject. If the reticence arise from the alleged difficulty of producing an article of the precise qualities required, the evil is a more serious one. In the meantime, let those disposed to experiment try the process with such information as exists already, of which we subjoin a summary.

The only direct information regarding the collodion to be found in the pamphlet is, that "it is different from the collodion in common use, inasmuch as it contains no *soluble* iodide." The reader may rest satisfied that it contains no *insoluble* iodide, and, from the allusions in other portions of the pamphlet, we gather that it contains a bromide. We are also informed that it is made according to the author's formula by a certain firm, with "ether and alcohol manufactured on the premises," and with pyroxyline "made according to a formula which is especially suited to the purpose," and "also manufactured on the premises." "There is no visible peculiarity which distinguishes it in any way from common collodion." This is a fact doubtless highly interesting. Those anxious to experiment must find out, however, the most suitable collodion. From the earliest records we have of the use of simply bromized collodion, which date back to the year 1853, when Sir John Herschell said, "A new photography has to be created, of which bromine is the basis," a large proportion of the salt has been recommended. The Abbe Laborde about that time recommended the use of ten grains of bromide of cadmium, and subsequent experience has generally confirmed the early impression.

Let the experimentalist, then, prepare a collodion with from eight to twelve grains of bromide of cadmium. As the cadmium salt has a slight tendency to gelatinize the collodion, it should be made from a powdery pyroxyline, and contain about four or five grains to the ounce.

This is to be excited in a neutral eighty-grain bath made from pure nitrate of silver. A special kind, at five shillings per ounce, bearing the author's signature, is recommended. The plate is not to remain in the bath until all the bromine is converted into bromide of silver, but removed before it is quite creamy and opaque.

After exciting, the plate is washed; it is placed for five minutes in a dipping-bath of distilled water, and then removed to a dish of distilled or rain-water, where it may remain for some hours, or may be used after soaking ten minutes.

It is then coated with what is termed an "organifier," consisting of—

Distilled water	1 ounce
Neutral gelatine (Nelson's patent)	3 grains
Sub-carbonate of soda	3 ,,

The gelatine having been dissolved by the aid of heat, the alkali is added, and the solution filtered. It remains fluid on cooling, but should be used fresh. It is poured on the washed plate, allowed to soak in a minute or two, poured off, and the plate is ready for exposure, and is said to be more sensitive than an ordinary wet plate.

The development is by the alkaline method, and so closely resembles that described by Mr. Mawdesly in our Year-Book for 1858, that our experimental readers may safely adopt the instructions there given. The development will be slow. A weak image having been brought out in this way, intensity may be obtained by the use of pyro and silver in the usual way. The negative is to be fixed with hyposulphite of soda.

In the dry process, the alkaline solution of gelatine is allowed to dry upon the plate, which will, it is stated, keep a long time before exposure, but should be developed within a few hours afterwards.

"The great enemy of the process is fog," the author states; the negatives being generally somewhat veiled, which he does not consider a defect, as he conceives its only injurious effect is to retard the operation of printing, without injuring the print. Should any of our experimental readers try the process, we shall be glad to hear of their results.* We hope at an early period to record our own experience.

ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

Part II.—Silver Printing.

Various methods of silver printing on ivory have been proposed and practised, some of them with much success, whilst others have been either doubtful or failures. There are two fatal sources of failure in silver printing on ivory, the nature and causes of which we shall point out, that it may be seen how far they are avoided in the processes we have to describe.

The first source of difficulty arises from the uneven porosity of the tablet of ivory, which causes a tendency to absorb solutions unevenly, which results in tints of different depths in the printed image, referable not to the varied gradation of the negative, but to the unequal proportion of the sensitive salts absorbed, the grain or figure of the ivory becoming as deeply marked by light and dark as the image printed from the negative itself. This has rendered necessary methods of using a medium—such as albumen or collodion—to secure an equal distribution of the sensitive salts.

The second difficulty, and that which demands the most careful attention, arises out of the hard, horny texture of the ivory, and its affinity for silver, which makes perfect fixation and perfect washing difficult. It has already been demonstrated by Mr. Spiller's experiments with the whites of albuminized paper, that organic compounds of silver are not readily dissolved by hyposulphite of soda, and it has been found that an ordinary fixing bath of hyposulphite does not remove the silver salts from ivory. Hence, ivory prints which have been fixed and washed with the ordinary care devoted to silver prints, have been found to darken gradually when exposed to light. In order, therefore, to secure perfect fixation, it has been found necessary either to treat the ivory print with cyanide of potassium, or to employ a hot concentrated solution of hyposulphite of soda, and in all cases to take especial care to secure perfect washing.

It is possible to obtain a surface sensitive to light by simply floating a tablet of ivory on a solution of nitrate of silver, but it prints slowly, and yields a very red and irregular image. By first treating the ivory with a chloride solution, and then with the silver, more sensitiveness and an image of better colour is obtained; but the image is still characterized by the inequalities in tint caused by unequal absorption. To obviate the latter difficulty the application of a coating which will hold the sensitive salts evenly is necessary; and as the painter prefers to work on the surface of the ivory itself, it is desirable that the medium employed to secure an even sensitive surface shall be capable of final removal, leaving the image on the ivory; and such a result is secured in several of the silver printing processes we shall describe.

Mr. Fry's Method.—The first method of silver printing on ivory is very efficient, and the results we have seen produced by it are very excellent. It was first described by Mr. Samuel Fry in the Photographic News eight or nine years ago. We give the process in Mr. Fry's words, slightly condensed, adding a comment here and there:—

"Prepare a mixture thus:—

Albumen	1 ounce
Chloride of sodium	3 grains
Citrate of soda	3 ,,
Ammonia liquor	3 min.

Let the mixture be most diligently agitated by a whisk until it is all froth. Now put aside, and allow it to settle down, when it may be decanted for future use, as the ammonia will preserve the mixture from decomposition, and it will improve with age, until three or four months old. To use this solution, take a good rigid camel-hair brush (I prefer a flat one, half an inch wide), and lay the albumen carefully over the smooth side of the ivory, taking care to pass the brush in the direction of the grain, and straight down only, not up and down. When the surface is quite smooth, put it aside to dry on the back, out of the way of dust, and, if possible, in a room of which the temperature is not lower than 70° or 80° Fahrenheit, as the albumen at this heat dries on the surface, and is less troublesome at a subsequent part of the process. These plates should be wrapped up when done, each in a separate piece of tissue-paper, to avoid scratches. When a picture is to be printed, float a sheet of ivory on a small quantity of eighty-grain solution of nitrate of silver. It is of great importance to be quick in placing it on, as the plate curls up instantly, and if it have not touched the fluid all over, or if there are bubbles under it, it is very probable that, in attempting to rectify this, the solution will get on the back of the plate, and thereby cause marks of more intense action in the picture at the parts over the spots.

"The sensitizing should always be done in the dark room, as the action of light on the animal substance of the ivory when covered with the surface of the chloride of silver is far more rapid than on paper, either albuminized or plain salted.

"After floating, remove the plate with horn pincers, and set it up on end to drain for a few minutes on a piece of bibulous paper; which done, lay it on its back in a drawer or cupboard to dry, meanwhile preparing the negative for producing its print in the following manner:—

"The great distinction between printing on paper and on ivory is in the fact that the former, when in the pressure-frame, allows the progress of the picture to be inspected by bending in the middle, whilst the latter, being rigid, cannot be so treated. It is, therefore, necessary to take a piece of white note-paper the size of the negative plate, gum one end of it a quarter of an inch deep, stick that end at the back of the lower part of the negative, then turn the paper round to the face of the negative. Now take the plate of ivory, and place at each corner of the back a touch of gum; then lay it on the face of the negative in its right place, and turn the piece of paper already in place down over it; the gum at the corners of the ivory will adhere to the paper, and it can now be all put in the pressure-frame together. As just noticed, the printing is very rapid, and should have great attention, and the frame never be opened but in the yellow room, or all the finest tones are soon lost. To see the progress of printing it may be taken quite out of the frame, as the paper keeps the ivory in position. The over-printing should be considerable, as in the subsequent processes it is often the case that much reduction is made in the intensity of the picture.

"Now wash the tablet in running water for ten minutes, rubbing it carefully on the surface with the finger, when it will be found that the whole of the albumen will rub off as a powder, *leaving the picture on the very surface of the ivory*, and with the pure face of that beautiful material unsullied. I know very well that at this point the practical photographer will exclaim, 'But albumen is rendered insoluble by contact with nitrate of silver, and cannot be removed.' So thought I; but it will be found that there is no difficulty whatever in rubbing it off under a stream of water, and the plate may then be transferred to a fixing bath of gold, as usual for paper; but as the picture, when painted, will be of considerable value, it is of vital importance that the bath be strong of gold and hypo, and by no means acid. About ten minutes is sufficient to produce a good colour, and one well suited for painting on. I find that generally preferred is a purple or dark sepia tone, rather than black, which often presents great difficulty to the painter in fair complexions. Now remove the plate to a bath of strong new hypo for ten minutes, and thence to running water, in which it should be rubbed with a sponge for the first ten minutes, directing the stream full on the plate. It should be left to wash in this stream of water for twelve hours, and then taken out and dried with a silk handkerchief.

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* In the only trial which has come under our attention the plates were found less sensitive than ordinary wet plates, and the image thin and fogged. Our readers will not, however, come to general conclusions on the record of limited experience.

"It is now more than likely that on placing the picture on a piece of card it will be found too dark for painting; in fact, it is as well it should be so, for by the next process the tone can be regulated with such exactness that it is unimportant how dark it now looks.

"Prepare a weak solution of cyanide of potash, say five grains to the ounce of water, and use it for no other purpose than the one now to be indicated, and, above all things, avoid using it for dissolving the iodide of silver from negatives, the result being that the solution becomes charged with cyanide of silver, and utterly destroys the ivory picture in a very short time. Now take a camel-hair brush and go carefully and very rapidly over the background of the picture with this mixture, working carefully round the hair, and it will at once be seen the colour is giving way under the cyanide; continue this treatment until the whole or nearly all of the background is gone, and the ivory left as clear and white as before any chemical operation was commenced on it; on this the painter (of course supposing he possesses the requisite talent) can produce those lovely effects for which ivory is unsurpassed by any known material. Now with the same solution go rapidly all over every part of the picture which requires to be made lighter, and, by having a brush at the other end of the pencil dipped in water, the action may be moderated to any extent. By this means, in skilful hands, and after a little practice, excellent effects may be obtained—heavy, sombre, shadows removed, a frowning forehead made more cheerful, high light judiciously thrown, leaving the clear surface of the ivory covered only with a delicate tint on which the painter can, by transparent colours, give the finest of flesh tints, and all that play of colour which the artistic eye perceives in the human countenance, with a force, vigour, and correctness to nature such as can rarely if ever be approached by means of any other medium. When the cyanide has played its part, wash for five minutes under running water, and from its complete and ready solubility the removal is easily effected.

"Were the albumen omitted, the solutions would sink into the plate, and the result be most unsatisfactory; and, on the other hand, it is seldom that without the use of the cyanide the exact tone is produced, from the fact of the ivory drying up several shades darker than it appeared when wet, as a plate of ivory when thoroughly soaked in water is very transparent. I am also inclined to believe that a picture which has been under the action of cyanide is more securely fixed than when it has been under hypo only; but it is necessary that most copious washing be given to the picture between the operations, or stains are produced by the mutual action of the two chemicals."

It will be seen that in this process Mr. Fry has met the difficulties to which we adverted. The albumen serves the double purpose of aiding in keeping the silver on the surface, and, at the same time, by its even absorption, distributes the sensitive layer evenly, checking or preventing the unequal absorption of the ivory. This albumen coating is then easily removed, leaving a clean, perfect image on the ivory surface. By printing deeply, he is enabled to apply cyanide, and secure perfect fixation, the inevitable reduction in depth being provided for by the over-printing. Altogether, this process is undoubtedly as efficient and trustworthy as any silver printing method, its only drawback being that it involves more trouble than some we shall yet describe.

In all processes of ivory printing, it is important to select the tablets as perfect as possible, and, if possible, to procure them finished ready for use; but as this is not always as practicable as might appear, it may not be out of place to conclude our first article on silver printing on ivory by a few practical observations on the selection and preparation of ivory for the purpose. In our first experiments we used the tablets of ivory as sold by the artist's colourman, ready prepared for miniature painting, the surface being apparently everything that could be desired. When the picture was finished, however, we were wofully disappointed; by some means or other a factitious surface had been given to the tablet, without really removing the saw marks, which, after immersion in water or aqueous solution, appeared in deep but fine ridges, quite sufficient to spoil the effect, and to give the appearance, besides, of a print which had not been in proper contact with the negative in the pressure-frame.

In subsequent operations we found it desirable to prepare the ivory ourselves. This is very simply done. A suitable piece having been selected, as free from grain as possible, all traces of saw marks must be removed by means of a steel scraper or a piece of glass. This being done, the ivory is placed on a piece of board, a few drops of clean water and a little very fine pumice powder (quite free from grit) applied. The surface is then carefully smoothed by this, rubbing all over with a circular motion. A glass muller is the right thing to use, we believe; but we have found a new bung cork answer admirably. When every trace of mark or scratch of any kind is removed, the tablet is ready for use. If a little cuttle-fish bone in powder be used dry to finish with, the texture of the surface will be improved.

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MASKS AND FACES.

BY PROTAGORAS.

PART VIII.—"BROWN" AND I AT IT AGAIN.

"Well, 'Brown,' how's your poor temper to-night, amiable or crusty?" This was the salutation I gave my friend "Brown" when he came to see me a few evenings after our former conversation. I generally like to chaff him a bit; I usually come off second best in a verbal encounter, but that I don't mind, so that I get him out. "I've been thinking, 'Brown,' of those ridiculous ideas you gave expression to the other night. I know you are designing a crest to ornament your note-paper and envelopes, and I don't know whether a goose or an owl would be the more appropriate!"

Brown.—"If you think you are going to draw me out by challenging me in that absurd manner, you are mistaken. I came to-night just to enjoy a quiet cigar, and, if possible, to have a little sensible conversation. I don't know that I have exercised my usual discretion in selecting your company, but you may take it as compliment or not, as you please. If I had wanted wit or fun, I should certainly not have come here, you may rely on that."—(I seldom get much by attempting to chaff "Brown.")—"Since I saw you I have been thinking about some of your high flown notions on photography. When you talk about its advancement, I think you are wholly wrong. You may depend on it, 'Protagoras'"—(Of course he no more calls me "Protagoras" than I call him "Brown;" we address each other by our proper names.)—"You may depend on it, 'Protagoras,' that photography has seen its day. The great expectations formed of it will never be realized. It was brought out by the scientific men, and at first they were very proud of their bantling; but they have long since practically disowned it, and they now fight as shy of it as they would of a bastard child. Where are the philosophic minds that take any interest in it? Name a single scientific man of repute who makes it his study! The British

Association once used to have it regularly discussed, and an enthusiastic party once talked of a photographic section; but where is that party now? The artists, too, they were wonderfully enamoured with it at first, but they have willingly dropt it."

Protagoras.—"There you are in error; they really do use the art, but they do not acknowledge it."

Brown.—"Can you point out any great artists who have had their ability increased by it? It may occasionally enable them to save time in drawing mechanical details, but has it made any second-rate man into a first rate one? Has it, or can it, make a first-rate man into a Raphael or a Michael Angelo? If it cannot do these things, what is the good of it to art? No; the fact is, people are beginning to find out that photography is a mistake—that it never merited a fraction of the praises and partronage it received; it is now finding its level, and a very low level it is. The truth is—"

Protagoras.—"Excuse me interrupting you, but the truth is, you are making yourself very disagreeable, and me very uncomfortable. You know if there is one think I like more than another, it is photography. Despite what you say, I have faith in it, and believe there is a glorious future before it; that it is yet but in its infancy; that there is a splendid scientific field in it for unfolding the mysterious secrets of nature. As to art, I cannot trust myself to say what increase of power I believe it may not communicate to him who truly appreciates it. I admit that at this moment photography is under a cloud, but I don't want you to make bad worse by throwing your wet blanket over it."

Brown.—"My dear boy"—("Brown," when he wants to be emphatic, generally "my-dear-boys" me, though why he should "boy" me at all is not clear, seeing I am as old as he is)—"My dear boy, photography, you may depend, is a fading art, and all its products naturally fade too, and quickly fall into the sear and yellow leaf. Many grieve that photographs so fade; I do not. I think it a merciful intervention. I see no reason why photographs should not fade. When the pretty flowers of the garden fade; when the classic statue crumbles, and the gorgeous cathedral decays; when the bloom of youth departs, and when men and women fade, why should photographs be everlasting? Are *they* ever so good as the things they represent? Do they adequately portray the passing evanescences they attempt to perpetuate? Are they not at best but miserable substitutes for what they imitate? When the rose of Sharon and the lily of the valley depart, why should the photograph remain behind? Is the dead clay better than the living life? The poet certainly says:

> 'A thing of beauty is a joy for ever;
> Its loveliness increases; it will never
> Pass into nothingness.'

But is a photograph such a thing of beauty that its loveliness so increases that it shall never pass into nothingness? Is it not rather because it is *not* a joy for ever that it rapidly passes into nothingness? And is it desirable it should be otherwise? If the general sentence is that

> 'All that's bright must fade,'

why should photographs, that at best are never particularly bright—why should they be exempt?"

Protagoras.—"Then you advocate that photographs ought to fade—that it is a merit that they should do so? That is curious doctrine, and one that will certainly never receive general assent. It is but natural that when one possesses anything of value, that they should wish it to last; and it is the duty of the person who produces it that he should endeavour to make it so. Your principle would put a premium on fading photographs. I must say I don't at all agree with you; you must be poking fun."

Brown.—"If you had followed the course of my thoughts—but which, from your natural obtuseness, I fear you are unable—you would have perceived that I am speaking in the abstract sense. Of course it is the duty of everyone in producing anything, even for a temporary—and, in relation to photographs, I was almost going to say for a trumpery—end, to produce it to the best of his ability; therefore my argument is no justification of dishonesty."

Protagoras.—"Perhaps you will not be above trying to make yourself clear, then?"

Brown.—"Well, I hate all manias. Photography has been a mania. I have been a maniac myself, but I hope I have seen the error of my ways."

Protagoras.—"You are a queer fish, I admit."

Brown.—"I consider the exaltation of photography to be one of the greatest mistakes of modern times. Photography is no apostle; and if it has a mission, it is a ridiculously low one. Photography is only a newly invented mode of registration, registering things that never have been registered before, and by a different method; but only registration. So far as admitting it into what we understand as the temple of Art, I put my positive prohibition. It is of the earth earthy, of mechanics mechanical, and of chemistry foul-smelling. Those are my sentiments, and I adhere to them."

Protagoras.—"Have you nothing else disrespectful to say of photography?'

Brown—(Lighting another cigar and replenishing his glass)—"I look on the present decadence of photography as a very wholesome sign. I believe it has not yet descended to its lowest depth; I hope not."

Protagoras.—"Why, you said before that you deserted it because it had gone so low. How much lower do you wish it to go?"

Brown.—"I wish it, like everything else, to occupy its proper place, and I am gratified that it is descending thereto. When it shall have gone down so low as to be unworthy the attention of every person of means, position, and culture; when it shall have been contemptuously neglected, from its very commonness, by the general herd; when it shall have so deteriorated as, for all practical purposes, to be stamped out, then, and not till then, shall I have revived hopes of photography."

Protagoras.—"Do you know, 'Brown,' I have serious doubts of your sanity. If you go on much further in this strain, I shall feel it my duty to call in a physician, and shall certainly beg your friends to take special care of you."

Brown.—"I believe in the photography of the past; I believe in the photography of the future; but I do not believe in the photography of the present."

Protagoras.—"Well, 'Brown,' I have listened many times to your whimsical notions, but I never heard you go on so as you have been doing this evening. Do you really mean anything by the absurd paradoxes you have been uttering, or have you been indulging in superlative bosh?"

Brown.—"My dear sir, you may think I have been in fun, but I assure you I was never more in earnest than in expressing my thoughts to-night. I am not surprised at your questioning me, as I feel I have not made myself clear. I have no doubt my ideas are singular, but I feel certain I am right. I have many times been inclined to unbosom myself, but you have apparently been so happy in what you have been engaged in, that I have hesitated, because I did not wish to undeceive you. Since I gave up actual camera-work, you have so often entertained me with the various improvements, the variations, the advancements, as you have called them, in practical photography, that I feel I know it all as if I had gone through it; but I, not being an operative, but rather a free and speculative photographer, have applied these things to my morals. I have observed the drift, and have drawn conclusions that I am sure your mind is not prepared for. You are always working it, but the intensity with which you have worked has necessarily limited your area of observation. My mind has been free to take, perhaps, loftier views—certainly to take different ones. That is the explanation of what I have said to-night."

Protagoras.—"I beg your pardon, but if you consider that an explanation, I do not. I want a much more explicit statement to warrant what I cannot help calling your absurd ideas."

Brown.—"Well, I don't mind promising on another occasion of attempting to make myself understood, even to your limited capacity; the evening is too far advanced to begin it; besides, you are gaping now. To-morrow night we will resume the subject, and, if you promise to be sharper than usual, I will attempt to enlighten your darkness."

Protagoras.—"Mind you come. *Bon soir!*"

Photographic Printing in Silver.

DODGES, FAILURES, AND REMEDIES.

BY W. T. BOVEY.

Chapter 3.—The Silver Bath.*

It is more than probable that argentometers are scaled inaccurately; it is a recognized fact that the most correctly adjusted instruments are incapable of conveying the exact information sought after; but I think that with any of the argentometers now in use for testing simple silver solutions their deviation from strict fact is not of sufficient importance to influence printing results to any mischievous extent. The best test, however, is experience—not experience of the mill-horse kind, that goes the dull round of daily routine with closed eyes, but such as is blended with much thought and scrutinising observation. When a silver bath is in perfect order, a sheet of albuminized paper floated thereon, and dried, should exhibit a gloss or bloom which is best seen on glancing the eye across the sheet; if, under this test, the surface of the paper lacks glaze, be sure, if the bath is known to be correct, that the surface consists of diluted albumen, or that the paper is defective. Frequently a pleasing and promising face is given to paper by rolling pressure, but, as a rule, the glaze so imparted is fictitious, and, as such, disappears when acted upon by solutions. In my own practice I never roll a sheet of paper if I can help it. Nor am I singular in this point, as I am acquainted with several skilful men who feel themselves justified in endorsing my opinion.

"Paper with an undressed face!" say they.

"And anyone who will take the trouble to undertake comparative experiments may hope only to meet with like experience," say I. One of the most offensive troubles the photographic printer encounters is a dirty silver bath. One of the chief points that should not escape attention is to keep his printing bath as clear as water that issues from the bubbling spring. The discolouration he has to guard against is occasioned by the albumen which a too dilute solution or other cause removes from the surface of the paper. A bath that is poor in silver causes rapid discolouration. A silver solution pure and simple will always create discolouration to some extent, but it should be noted that a strong bath produces the evil spoken of to a lesser and slower degree than a weaker one; whilst with a comparatively small amount of silver used in conjunction with nitrate of soda, the bath is kept permanently free from the tainting, which needs the aid of kaolin to procure a temporary state of purity. And in this fact, last offered, I perceive strong evidence in support of a theory lately advanced by an able and intelligent experimentalist, Mr. G. Price, who is of opinion that nitrate of soda plays (when used for printing purposes) a part more chemical than mechanical.

Let the case, however, rest as it may, most certain is it that a printing bath composed of silver and nitrate of soda needs no other treatment apart from simple filtration through simple filtering-paper, to keep it bright, whilst to preserve a solution of silver only, strength from twenty to eighty grains, as well under and over these quantities, in a similar condition, the albuminous impurity, which will occur in the best-regulated baths, can only be removed when the aid of kaolin, animal charcoal, or one of the other known etceteras, is called into requisition.

"But I used nitrate of soda, as I have before remarked" (interrupts Experience No. 2), "and am sure the soda was pure. I mixed the bath in the way you advised, but I had not used the mixture a week before the discolouration became an abomination, and, to my cost, I know that my prints, my printer, and everything else went wrong; and had I not left nitrate of soda for silver pure and alone, I must have gone from wrong to the dogs or to the lunatic asylum."

Probably you did all you describe, I observe; but permit me to state that, as far as my experience has taught me, I find that an adjunct to the silver bath, whatever its kind and nature, proves advantageous only when a liberal allowance of silver is provided. Very fair results can be obtained with a bath twenty grains silver nitrate to forty of nitrate of soda, but a solution so composed is an unsafe one if its use is to be continuous. I have obtained good results with five grains silver only to eighty of soda, but the sensitizer so prepared was applied to an experimental and temporary use. In reference to this matter of weak and strong printing baths, I am of opinion that to secure the finest printed results, a mixed bath of soda and silver should never fall within the minimum of thirty grains of the latter salt to each ounce of solution. The former admits of extended latitude, ranging from twenty to eighty grains per ounce; and when using the bath, if the amount of silver needed is regularly supplied, kaolin and charcoal might be excluded the printing room, as a funnel and filter-paper are capable, under the conditions pointed out, of executing the work of cleansing thoroughly and in every respect satisfactorily.

Concerning the matter of floating paper. By some mysterious influence we all seem to be impressed with the solemn power of those magic minutes five, one, two, three, four, five—select either of those numbers calmly; but I apprehend that the most venturesome printer that ever floated a sheet of paper in a garret would turn pale with terror if he were told to watch the second-hand of his watch round ten ere he removed his sheet from the bath. True, he sometimes does it, but play and minutes on such rare occasions run fast, and the effect is not strikingly observable. I broke through bounds a long time since, but first I paused; again hesitated; at length an experiment on a small scale imparted courage, which induced me to take the leap direct; and I was glad I did it when I alighted on a better side of the question. And to make my discovery clear, I must pause to theorise over the matter as briefly as I may do.

I have on more than one occasion explained the generally accepted doctrine that describes the mysteries of albumen paper floatation on to a silver solution. To make my subject clear here, I must needs reiterate, but briefly as words will admit of.

First in order forms the albuminate of silver.

Next chloride of silver comes.

Lastly, free silver finds a place, which has an important work to perform.

Recent experiment and observation have extended my view beyond the boundary embraced in the above summary. The particulars I proceed to relate as they bear on the important question of five minutes *versus* ten and more.

The probable reason why that the chloride salt is not simultaneously acted upon throughout the albumen film is, on account of the resistance offered by the coating of albumen that surrounds each atom of salt, and the natural resistance against an exchange of elements offered by the body not in a state of solution. If we admit the presence of a resisting force, the rest is easily explained, as the first resistance would be offered by the outer layer of salt within the outer surface of the albumen film. Now, supposing *that* obstruction occupies five minutes effectually to remove, plainly the inner layers of salt have not been operated upon by the silver when the paper leaves the bath; consequently, the print cannot possess the maximum of vigour the paper is capable of producing. But if, instead of five, we allow ten minutes of floating, the probability would be that all the chloride salt would be converted into a sensitive medium, and the resulting picture would, by its extra vigour, produce evidence of results—improved or otherwise—by the departure from ordinary rule. But whilst accrediting chloride of silver with the government of production, we must not overlook the important part played by free nitrate of silver; and the condition in which it exists ready for work in an albumen film demands a few words of consideration.

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* Continued from p. 391.

Hitherto, when this free salt has been made a subject of mention, the necessity of its presence has been duly recognized; but how present, whether superficially distributed or symmetrically arranged, has never, I believe, been duly considered. My impression is, that the formation of an atom of chloride of silver is immediately followed by an adherence of free silver to the chloride. If the silver solution is weak, the free silver is there, but the chloride of silver is sparingly constructed, on account of the silver being incapable of overcoming the obstruction within the space of time allowed for floating. When the atom of chloride of silver is operated upon by light, it parts with a portion of chlorine, which attacks the free silver in close contiguity, converting it into a chloride, that, in its turn, submits to actinic power. I am fully borne out in this view of the matter by the fact that whether the bath is weak or otherwise, on which a sheet of paper is floated, the silver borne from the solution on the surface of the paper by its removal from the liquid never forms any part of the picture produced by subsequent exposure to light, but is removed from the paper by the washing water. Now, it seems to me, that if free nitrate is available when, by the rule of any-how, presented to light, a print would not suffer for lack of the superstructure rearing free salt as long as an atom of the salt remained unconverted to use; that such, however, is untrue to experience, I have already shown, what to every printer must have been noticed.

In conclusion, if these things, as I have explained them, be true, we at once perceive that our governing power over results can be extended within broad limits, if we can make up our mind to break through conservative notions, and take advantage of the latitude admissible in the time given for floating paper on the printing bath. Example: If the negative is harsh of contrast, with over-opaque lights, and shadows too transparent, float the paper the shortest time that will enable it to produce a clear image (say one minute). By the adoption of this plan, the silver will penetrate superficially, and the paper will be incapable of producing a strong image. On the other hand, when a negative yields, under ordinary treatment, a too feeble print, to increase depth of reduction extend time of floating, in order that all the chloride salt might be decomposed by the silver; and in this case be sure that the solution be sufficiently rich to provide the requisite quantity of free nitrate—ten minutes to a quarter of an hour admissible; strength of bath not exceeding sixty grains. With a good negative, the orthodox five minutes might with safety be observed.

A summary of the contents of this chapter I state as follows:—

1st. Be not too exacting in the economy you practise in reference to your printing bath.

2nd. Float short, or float long, as the negative is weak or strong.

3rd. In the observance of the second rule, do not be afraid to use nitrate of soda (the number of intelligent cavillers over its utility notwithstanding). Use it, if you desire, a clear solution, without the waste occasioned by the use of kaolin.

4th, and last. If I have omitted any particular on which any among my readers desired information, on receipt of particulars I can supplement this chapter, now concluded, with a letter addressed to the Editor.

My next will treat on Printing and its Dodges.

CHLORIDE OF SILVER AND GOLD COLLODION.

BY CHARLES DURAND.

Seeing an article in last week's News by Mr. Spiller, referring to the production of prints upon paper requiring no after-toning, has recalled to my remembrance certain experiments undertaken about a year since, having a similar object.

I observed that a little solution of chloride of gold added to nitrate of silver in water caused a dense brownish precipitate, which, upon exposure to light, very rapidly became intensely black. Upon adding a few drops of chloride of gold (one grain to a drachm of water) to an ounce of chloride of silver collodion—containing ten grains of silver to the ounce—I found that the salts produced remained in suspension, and gave to the collodion a yellow colour. This collodion upon paper printed a rich brown, and, upon placing the prints in a fixing bath of sulphocyanide of ammonium, they quickly became a pretty purple tint; in fact, the unmistakable colour produced by gold thus proving that that metal formed part of the printed image.

A print from the same collodion without the gold of course became only yellow in the sulphocyanide of ammonium bath.

Upon placing some of the silver and gold prints into hyposulphite of soda instead of the sulphocyanide of ammonium, they became of a rich sepia, much more pleasant for portraits than those produced by the ammonium bath. I found, upon testing the prints produced by these processes, that they were very indestructible, but the collodion containing the gold must be used within twenty-four hours, as after that time it begins to darken, and ultimately becomes useless.

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PHOTOGRAPHING THE ECLIPSE IN AMERICA.

So far as we can glean from the daily press—our direct advices not having yet arrived—the recent total eclipse of the sun has been successfully photographed in America. At Shelbyville, in Kentucky, it is stated that photographs of the sun were taken at different times during the partial obscuration. The beautiful red flames or solar protuberances were visible to the naked eye. "Bailey's beads," as well as the dark and dismal shadows of the moon, sailing away through the air, were noted by a party of amateurs stationed on the top of Shelby College. The sky was perfectly clear, and everything seemed to propitiate the success of the observations. There were ten or twelve mounted instruments in use on the occasion, the principal one of which was the Shelbyville College telescope, which was handled by Professor Wintock, assisted by Alvan G. Clark, of Cambridge, Mass. Some minutes before the total phase the usual phenomena of distraction among birds of the air and cattle occurred. Six minutes before totality a deathly ashen hue overspread the countenances of all present, and for a while the faint-hearted were terrified. The scene during the totality is described as an awful one, and when the sunlight appeared again a shout of exultation went up from the great crowd in the college grounds. Successful observations were made also from various other stations. The *Daily News*, commenting on the subject, says:—

> In many respects this eclipse was better suited to the requirements of photographers and spectroscopists even than the eclipse of last year. It did not, indeed, last quite so long, but the operations of the photographer were not interfered with by the effects of the tremendous heat of the tropics; and again, the eclipsed sun was not, as in 1868 (in India), close to the point overhead, so that observers could watch the eclipse with more comfort, and therefore with greater attention. The track of the moon's shadow—the real shadow we mean, not the penumbra—lay across the eastern parts of Siberia, thence to the part of America which formerly belonged to Russia, thence with a south-easterly course across the very heart of the United States from Minnesota to North Carolina; and the shadow left the earth at a point close by the Bermuda Isles.
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> The American astronomers availed themselves worthily of the favourable opportunity thus presented to them. Along the line

of the eclipse several observing parties were stationed; spectroscopy and the difficult processes of celestial photography were successfully applied; and a set of observers devoted themselves to the search for Vulcan, or any other planets which may exist within the orbit of Mercury. Nor were meteorological observations neglected. The phenomena presented by the red prominences naturally occupied a large share of attention. The recent researches of astronomers have revealed so many striking and interesting facts respecting these objects, that it was looked on as a matter of extreme importance to secure fresh observations of the prominences under the favourable circumstances of a total eclipse. Astronomers have indeed managed to make the prominences visible without the aid of an eclipse; but the red flames are thus seen "as through a glass darkly." It is only during a total eclipse that their most striking features can be distinctly recognized. And then there are particular reasons for looking on them with interest at the present time. Their association with the solar spots has long been a subject of attention, and now the sun's face is in an unusually spotty state, is seamed and furrowed by the great faculous waves, and, in fact, indicates in a number of striking ways the approach of the period of maximum disturbance. Thus the red prominences are just now more than usually significant. They can teach us much, it may be, respecting the laws of that strange periodic process of disturbance which forms one of the most perplexing problems presented to the astronomer.

We hear, therefore, with pleasure that these objects were not only seen with unusual distinctness, but have been photographed successfully, and have revealed under spectroscopic research a new and interesting feature. So soon as the totality had commenced, a red prominence appeared on the left side of the sun, resembling a tongue of flame projected horizontally. Presently another was made out, projecting vertically downwards from the lowest point of the sun. In the telescope, however, many more were seen; and doubtless when the photographs have been enlarged, it will be found—as on former occasions—that many prominences existed which even the telescope did not reveal; for Mr. De La Rue, F.R.S., who has mastered more successfully than any other astronomer the difficulties of celestial photography, has noticed that the prominences are sometimes of such extreme delicacy as to reveal themselves only by the influence of their chemical rays. One of the prominences was carefully analysed under the spectroscope of Professor Winlock, who detected no less than eleven lines in its spectrum. Thus the observations of M. Rayet last year, during the eclipse in India, are more than confirmed. He announced the existence of eight lines, but, as no one else had seen them, considerable doubt rested on the observation. Now we may look upon it as certain that these enormous flames, which reach tens of thousands of miles from the sun's surface, contain other elements in combustion than the hydrogen hitherto alone proved to exist in them. What those elements are our spectroscopists will doubtless soon learn.

THE BRITISH ASSOCIATION AT EXETER.

The thirty-ninth meeting of the British Association for the Advancement of Science has just been held in Exeter. Less succcessful than the average in numbers and funds, it has been in other respects a pleasant meeting. A quaint old town, full of archaic and other interesting associations, a district full of beautiful natural scenery, fine weather, and general hospitality, have tended to secure a satisfactory and pleasant meeting, if some forms of success were wanting.

In matters of photographic interest perhaps no meeting was ever more barren. Year after year the papers having a special photographic bearing have diminished in number, and this meeting was more destitute than usual in matters of incidental interest to photographers. This fact was less to be expected and more to be regretted, when we remember that the President, Professor Stokes, at one time a member of the Photographic Society's Council, has been essentially distinguished by his researches and discoveries in connection with light, and especially in relation to the phenomena of fluorescence. In his admirable address we have, of course, an excellent synopsis of some of the prominent facts of optical science, and its relation to astronomy, in which the known services of photography in this department have their record. A slightly condensed extract from this part of his address will interest many of our readers. He says:—

"We are accustomed to apply to the stars the epithet fixed. Night after night they are seen to have the same relative arrangement; and when their places are determined by careful measurement, and certain small corrections due to known causes are applied to the immediate results of observation, they are found to have the same relative distances. But when, instead of days, the observations extend over months or years, it is found that the fixity is not quite absolute. Defining as fixity invariability of position as estimated with reference to the stars as a whole, and comparing the position of any individual star with those of the stars in its neighbourhood, we find that some of the stars exhibit 'proper motions,' show, that is, a progressive change of angular position as seen from the earth, or rather, as they would be seen from the sun, which we may take for the mean annual place of the earth. This indicates linear motion in a direction transverse to the line joining the sun with the star. But since our sun is merely a sun, a line drawn from the star exhibiting proper motion to our sun is, as regards the former, merely a line drawn to a star taken at random, and, therefore, there is no reason why the star's motion should be, except accidentally, in a direction perpendicular to the line joining the star with our sun. We must conclude that the stars, including our own sun, or some of them, at least, are moving in various directions in space, and that it is merely the transversal component of the whole motion, or rather of the motion relatively to our sun, that is revealed to us by a change in the star's apparent place.

"How then shall we determine whether any particular star is approaching to or receding from our sun? It is clear that astronomy alone is powerless to aid us here, since such a motion would be unaccompanied by change of angular position. Here the science of optics comes to our aid in a remarkable manner.

"The pitch of a musical note depends, as we know, on the number of vibrations which reach the ear in a given time, such as a second. Suppose, now, that a body, such as a bell, which is vibrating a given number of times per second, is at the same time moving from the observer, the air being calm. Since the successive pulses of sound travel all with the velocity of sound, but diverge from different centres, namely, the successive points in the bell's path at which the bell was when those pulses were first excited, it is evident that the sound waves will be somewhat more spread out on the side from which the bell is moving, and more crowded together on the side towards which it is moving, than if the bell had been at rest. Consequently the number of vibrations per second which reach the ear of an observer situated in the former of these directions will be somewhat smaller, and the number which reach an observer situated in the opposite direction somewhat greater than if the bell had been at rest. Hence to the former the pitch will be somewhat lower, and to the latter somewhat higher, than the natural pitch of the bell. And the same thing will happen if the observer be in motion instead of the bell, or if both be in motion: in fact, the effect depends only on the relative motion of the observer, and the bell in the direction of a line joining the two—in other words, on the velocity of recession or approach of the observer and the bell. The effect may be perceived in standing by a railway when a train in which the steam whistle is sounding passes by at full speed, or better still, if the observer be seated in a train which is simultaneously moving in the opposite direction.

"The present state of optical science is such as to furnish us with evidence, of a force which is perfectly overwhelming, that light consists of a tremor or vibratory movement propagated in an elastic medium filing the planetary and stellar places, a medium which thus fulfils for light an office similar to that of air for sound. In this theory, to difference of periodic time corresponds difference of refrangibility. Suppose that we were in possession of a source of light capable, like the bell in the analogous case of sound, of exciting in the æther supposed at rest vibrations of a definite period, corresponding, therefore, to light of a definite refrangibility; then, just as in the case of sound, if the source of light and the observer were receding from or approaching to each other with a velocity which was not insensibly small compared with the velocity of light, an appreciable lowering or elevation of refrangibility would be produced, which would be capable of detection by means of a spectroscope of high dispersive power.

"The velocity of light is so enormous—about 185,000 miles per second—that it can readily be imagined that any motion which we can experimentally produce in a source of light is as rest in comparison. But the earth in its orbit round the sun moves at the rate of about eighteen miles per second; and in the motions of stars approaching to or receding from our sun we might expect to meet with velocities comparable with this. The orbital velocity of the earth is, it is true, only about the one ten-thousandth part of the velocity of light. Still the effect of such a velocity on the refrangibility of light, which admits of being easily calculated, proves not to be so insensibly small as to elude all chance of detection, provided only the observations are conducted with extreme delicacy.

"But how shall we find in such distant objects as the stars an analogue of the bell which we have assumed in the illustration drawn from sound? What evidence can we ever obtain, even if an examination of their light should present us with rays of definite refrangibility, of the existence in those remote bodies of ponderable matter vibrating in known periods not identical with those corresponding to the refrangibilities of the definite rays which we observe? The answer to this question will involve a reference, which I will endeavour to make as brief as I can, to the splendid researches of Professor Kirchhoff." * * *

"Now by careful and repeated observations with a telescope furnished with a spectroscope of high dispensive power, Mr. Huggins found that the F line, the one selected for observation, in the spectrum of Sirius did not exactly coincide with the corresponding bright line of a hydrogen spark, which latter agrees in position with the solar F, but was a little less refrangible, while preserving the same general appearance. What conclusion, then, are we to draw from the result? Surely it would be most unreasonable to attribute the dark lines in the spectra of the sun and of Sirius to distinct causes, and to regard their almost exact coincidence as purely fortuitous, when we have in proper motion a *vera causa* to account for a minute difference. And if, as Kirchhoff's labours render almost certain, the dark solar line depends on the existence of hydrogen in the atmosphere of our sun, we are led to infer that that element, with which the chemist working in his laboratory is so familiar, exists and is subject to the same physical laws in that distant star, so distant that, judging by the most probable value of its annual parallax, light which would go seven times round our earth in one second would take fourteen years to travel from the star. What a grand conception of the unity of plan pervading the universe do such conclusions present to our minds!

"Assuming, then, that the small difference of refrangibility observed between the solar F and that of Sirius is due to proper motion, Mr. Huggins concludes from his measures of the minute difference of position that at the time of the observation Sirius was receding from the earth at the rate of 41.4 miles per second. A part of this was due to the motion of the earth in its orbit; and on deducting the orbital velocity of the earth, resolved in the direction of a line drawn from the star, there remained 29.4 miles per second as the velocity with which Sirius and our sun are mutually receding from each other."

"I turn now to another recent application of spectral analysis. The phenomenon of a total solar eclipse is described by those who have seen it as one of the most imposing that can be witnessed. The rarity of its occurrence and the shortness of its duration afford, however, opportunity for only a hasty study of the phenomena which may then present themselves. Among these, one of the most remarkable, seen indeed before, but first brought prominently into notice by the observers who watched the eclipse of July 7th, 1842, consists in a series of mountain-like or cloud-like luminous objects seen outside the dark disc of the moon. These have been seen in subsequent total eclipses, and more especially studied, by means of photography, by Mr. Warren De La Rue in the eclipse of June 18th, 1860. The result of the various observations, and especially the study, which could be made at leisure, of the photographs obtained by Mr. De La Rue, proved conclusively that these appendages belong to the sun, not to the moon. The photographs proved, further, their light to be remarkable for actinic power. Since that time the method of spectral analysis has been elaborated, and it seemed likely that additional information bearing on the nature of these objects might be obtained by the application of the spectroscope. Accordingly, various expeditions were equipped for the purpose of observing the total solar eclipse which was to happen on August 17th, 1868. In our own country an equatorially mounted telescope provided with a spectroscope was procured for the purpose by the Royal Society, which was entrusted to Lieutenant (now Captain) Herschel, who was going out to India, one of the countries crossed by the line of the central shadow. Another expedition was organised by the Royal Astronomical Society, under the auspices of Major Tennant, who was foremost in pressing on the attention of scientific men the importance of availing themselves of the opportunity.

"Shortly before the conclusion of the meeting of the Association at Norwich last year, the first results of the observations were made known to the meeting through the agency of the electric telegraph. In a telegram sent by M. Janssen to the president of the Royal Society, it was announced that the spectrum of the prominences was very remarkable, showing bright lines, while that of the corona showed none. Brief as the message necessarily was, one point was settled. The prominences could not be clouds in the strict sense of the term, shining either by virtue of their own heat, or by light reflected from below. They must consist of incandescent matter in the gaseous form. It appeared from the more detailed accounts received by post from the various observers, and put together at leisure, that, except in the immediate neighbourhood of the sun, the light of the prominences consisted mainly of three bright lines, of which two coincided with C and F, and the intermediate one nearly, but, as subsequent researches showed, not exactly, with D. The bright lines coinciding with C and F indicate the presence of glowing hydrogen. Several of the other lines were identified with those which would be produced by the incandescent vapour of certain other elements.

"This is precious information to have gathered during the brief interval of the total phase, and required on the part of the observers self-denial in withdrawing the eye from the imposing spectacle of the surrounding scenery, and coolness in proceeding steadily with some definite part of the inquiry, when so many questions crowde for solution, and the fruits of months of preparation were to be reaped in three or four minutes, or lost altogether; especially when, as too often happened, the observations were provokingly interrupted by flying clouds."

After an interesting account of Mr. Lockyer's mode of observing the prominences constantly, without the presence of an eclipse, he says:—

"One of the most striking results of the habitual study of these prominences is the evidence they afford of the stupendous changes which are going on in the central body of our system. Prominences, the heights of which are to be measured by thousands and tens of thousands of miles, appear and disappear in the course of some minutes. And a study of certain minute changes of position in the bright line F, which receive a simple and natural explanation by referring them to proper motion in the glowing gas by which that line is produced, and which we see no other way of accounting for, have led Mr. Lockyer to conclude that the gas in question is sometimes travelling with velocities comparable with that of the earth in its orbit. Moreover, these exhibitions of intense action are frequently found to be intimately connected with the spots, and can hardly fail to throw light on the disputed question of their formation. Nor are chemical composition and proper motion the only physical conditions of the gas which are accessible to spectral analysis. By comparing the breadth of the bright bands (for though narrow they are not mere lines) seen in the prominences with those observed in the spectrum of hydrogen rendered incandescent under different physical conditions, Dr. Frankland and Mr. Lockyer have deduced conclusions respecting the pressure to which the gas is subject in the neighbourhood of the sun."

After an interesting resumé of recent progress in chemical science, he concludes his address with some admirable and high-toned remarks:—

"But do the laws of chemical affinity, to which, as I have endeavoured to infer, living beings, whether vegetable or animal, are in absolute subjection, together with those of capillary attraction, of diffusion, and so forth, account for the formation of an organic structure, as distinguished from the elaboration of the chemical substances of which it is composed? No more, it seems to me, than the laws of motion account for the union of oxygen and hydrogen to form water, though the ponderable matter so uniting is subject to the laws of motion during the act of union just as well as before and after. In the various processes of crystallization, of precipitation, and so forth, which we witness in dead matter, I cannot see the faintest shadow of an approach to the formation of an organic structure, still less to the wonderful series of changes which are concerned in the growth and perpetuation of even the lowliest plant. Admitting to the full as highly probable, though not completely demonstrated, the applicability to living beings of the laws which have been ascertained with reference to dead matter, I feel constrained, at the same time, to admit the existence of a mysterious something lying beyond—a something *sui generis*—which I regard not as balancing and suspending the ordinary physical laws, but as working with them and through them to the attainment of a designed end.

"What this something which we call life may be is a profound mystery. We know not how many links in the chain of secondary causation may yet remain behind; we know not how few. It would be presumptuous, indeed, to assume in any case that we had already reached the last link, and to charge with irreverence a fellow-worker who attempted to push his investigations yet one step further back. On the other hand, if a thick darkness enshrouds all beyond, we have no right to assume it to be impossible that we should have reached even the last link of the chain—a stage where further progress is unattainable—and we can only refer the highest law at which we stopped to the fiat of an Almighty Power. To assume the contrary as a matter of necessity, is practically to remove the first cause of all to an infinite distance from us. The boundary, however, between what is clearly known and what is veiled in impenetrable darkness is not ordinarily thus sharply defined. Between the two there lies a misty region, in which loom the ill-discerned forms of links of the chain which are yet beyond us. But the general principle is not affected thereby. Let us fearlessly trace the dependence of link on link, as far as it may be given us to trace it, but let us take heed that in thus studying second causes we forget not the first cause, nor shut our eyes to the wonderful proofs of design which, in the study of organized beings especially, meet us at every turn." * * *

"When from the phenomena of life we pass on to those of mind, we enter a region still more profoundly mysterious. We can readily imagine that we may here be dealing with phenomena altogether transcending those of mere life, in some such way as those of life transcend, as I have endeavoured to infer, those of chemistry and molecular attractions, or as laws of chemical affinity in their turn transcend those of mere mechanics. Science can be expected to do but little to aid us here, since the instrument of research is itself the object of investigation. It can but enlighten us as to the depth of our ignorance, and lead us to look to a higher aid for that which most nearly concerns our well-being."

The soirées were successful and well attended. There were various exhibitions of scientific instruments and phenomena, but little relating to photography. Mr. Mayall had some magnificent examples of plain and coloured enlargements, and Mr. Abney, of Torquay, some fine specimens, plain and coloured, of transferred enlargements on collodion. The lecture by Professor Phillipps on Vesuvius, and that by Norman Lockyer on his recent spectroscopic observations of the sun, were very successful, and the fine hall, just completed, in which they were given, was crowded to hear them.

The Report of the Kew Committee contains, as usual records of the photographic registrations during the year. It says:—

The Kew heliograph, in charge of Mr. De La Rue, continues to be worked in a satisfactory manner. During the past year 274 negatives have been taken on 163 days; 40 pictures of the Pagoda in Kew Gardens, as a fixed terrestrial object at a known distance, have likewise been taken, with the object of determining, by measurements of these pictures, which are taken in different parts of the field of the telescope, both the optical distortion of the sun-pictures and the angular diameter of the sun.

A paper communicated to the Royal Society by Messrs. Warren De La Rue, Stuart, and Loewy, entitled "Researches on Solar Physics.—Heliographical Positions and Areas of Sun-spots observed with the Kew Photo-heliograph during the years 1862 and 1863," is the first of the series of reductions of the photographic solar records; it is in the course of publication in the "Transactions," and will shortly be distributed.

It is hoped that, during next winter, a paper containing the heliographical positions and areas of the spots observed at Kew during the years 1864, 1865, and 1866 may be communicated to the Royal Society, as well as a paper representing, both numerically and graphically, the spotted area of the sun during three complete solar periods, the results being partly derived from Schwabe's and partly from Carrington's observations, in addition to those made with the Kew photo-heliograph.

Another paper by the above authors, entitled "Account of some Recent Observations on Sun-spots made at the Kew Observatory," has likewise been ordered to be published in the "Philosophical Transactions."

M. Berg, of the Wilna Observatory, has, during the past year, received instruction at Kew in the method of taking solar photographs, and in that of measuring the positions and areas of sun-spots, the Director of the Observatory with which he is connected being desirous of working along with Kew, and of following out the same methods of observation as well as the same researches.

The number of sun-spots recorded after the manner of Hofrath Schwabe, together with a table exhibiting the monthly groups observed at Dessau and at Kew for the year 1868, have been communicated to the Astronomical Society, and published in their monthly notices.

We regret to mention that Hofrath Schwabe, owing to his great age, has found it necessary to discontinue his observations; but the Committee have satisfaction in stating that arrangements have been made for continuing, at Kew, the grouping of sun-observations which has been carried on for some time according to Hofrath Schwabe's plan, and for publishing the results annually.

A minute comparison of the records of Hofrath Schwabe with the simultaneous photographic records at Kew has revealed the great trustworthiness of his drawings, which are at present in the possession of Kew Observatory. The proposed communication already alluded to as representing the spotted area of the sun during three complete solar periods is thus rendered possible; and while it is imagined that by this means a valuable record of the past will be obtained, it is hoped that the interest now displayed in solar research will secure the uninterrupted continuance of such a record for the future.

In referring to the sources of error in the photographic registration, here is a passage worth reproducing:—

Want of definition arising from an improper adjustment of the lens ought to be noticed, but it is believed that the definition is good in the case of all the observatories. As the instrumental constants for all the various barographs have now been determined, it would hardly seem expedient to alter the position of the lens, which would alter these constants, for the purpose of procuring greater perfection in definition.

The photographic sheet which is attached to the cylinder of the barograph ought to be evenly put on, without any *bagging* or *bulging*; as, if it bulged, besides giving a bad result, it might come into contact with the end of the temperature adjustment bar.

Care ought to be taken that there is no *want of light*, especially in the case of a low barometer; and, finally, great precaution should be taken to avoid *finger-marks* and every species of *bad photography*.

In the sections little of photographic interest occurred. On Thursday, in Section B (Chemical Science), a report was read on sections and photographs of coral, in which the method of cutting the coral into thin sections, which, being translucent, are capable of being used as negatives from which to obtain prints showing their structures, which was found as useful as it was ingenious. In the same section, on Friday, Dr. Phipson read an interesting paper "On some New Substances Extracted from Walnut," the chief of which he described as "Rothic acid," a substance in many respects analogous to gallic acid; whether it will possess any photographic application remains yet to be determined. Professor Tomlinson, in the same section, read a paper on the "Supposed Action of Light on Combustion," in which he stated the result of a series of experiments, by which he arrived at the conclusion that the common notion that sunlight retarded combustion was erroneous.

In section A, on Friday, Col. Strange's Report, or that of the Committee of which he was Chairman, on the subject of obtaining increased facilities for scientific investigation, was very important, and we shall probably recur again to the subject. In the same section, on Saturday, Professor Sylvester, the Chairman, exhibited two stereoscopic prints, illustrating a somewhat difficult mathematical problem, in which a "cubic Eikosi-heptagram," or the intersection of a cube with twenty-seven straight lines, was represented.

On Monday, in Section A, Professor Morren read an interesting paper on the chemical reaction of light upon certain vapours, in which he described a series of experiments in which he had verified and carried further the experiments communicated last year to the Royal Society by Professor Tyndall. In the course of his remarks, he referred to the action of a solution of sulphate of quinine in arresting the chemical rays, and stated that he had found a thickness of five millimetres quite sufficient for the purpose. The paper, although not specifically photographic in its bearing, was an interesting contribution to the science of light, and we shall probably give it at length in another issue. Beyond the papers to which we have referred, there were none whatever of a specially photographic bearing.

Correspondence.

THE CYANIDE POISONING AT FOLKESTONE.

My Dear Sir,—Will you kindly state in your next that the firm of Lambert, Weston, and Son, Artist Photographers Royal, Dover and Folkestone, are not connected with the business carried on in Guildhall Street, Folkestone, under the name of Weston and Son, and upon which your last journal so lengthily commented.—We are yours sincerely,

Lambert, Weston, and Son.

17, *Waterloo Crescent, Dover, and*
23, *Sandgate Road, Folkestone.*

RESTORING CRACKED FILMS.

Dear Sir,—Having recently paid a visit to Messrs. Holroyd's splendid establishment at Harrogate, I saw a method for the above which will prove invaluable to photographers possessing negatives which, through insufficient washing, fixing, or damp, have become apparently useless.

Take a brush used for spotting, and, with a little Prussian blue, run it over the cracks; when thoroughly dry, gently breathe on it; then, with a piece of blotting-paper, remove the superfluous colour by wiping it gently over the cracks. No matter how bad the negative, it presents all the appearance of having just left the operating room to be varnished.

If not trespassing too much on your space, allow me to add, that if anything is calculated to encourage persevering followers of our beautiful art, it is to see some photographs they possess, eight feet by four, of the Coloseum and S$^{t.}$ Peter's at Rome. They are perfect gems, and are alone sufficient to warrant photography in taking a place in the fine arts.—Yours, E. Lancaster.

Wandsworth, August 23rd, 1869.

PS.—The Messrs. Holroyd, with their proverbial generosity, have given me permission to publish the above.

◆

Talk in the Studio.

The Quekett Club.—The fourth annual report of the Quekett Microscopic Club records continued and increased success, not less than one hundred and forty-two new members having been admitted during the year.

Obituary.—We learn with deep regret that Mr. Roger Fenton, one of the earliest and most successful photographers, the first Secretary of the Photographic Society, of which he was one of the chief founders, died after a short illness, at the age of fifty. A man of considerable culture and taste, his photographs were generally distinguished by artistic feeling. He had, however, for some years given up the practice of photography, although he continued to take an interest in it until the time of his death.

Seizure of Indecent Photographs and Prints.– On Wednesday, at Bow Street Police Court, Paul de Paris, of Wych Street, note paper dealer; Michael Saunders, of Wych Street, bookseller; and Richard Groves, Holywell Street, printer, were brought up before Sir Thomas Henry, on a warrant signed by him, for illegally selling obscene prints and papers called photographic slides. A witness, after some other details of purchasing a book, said that on Monday, the 16th inst., between five and six in the evening, he went to 45, Wych Street, and seeing the defendant Paris, asked him if he had any photographs. Defendant asked if witness required slides at 5s. 6d. each? He answered, "Yes," and defendant went out, shutting the door, and brought in the defendant Saunders, who took from his side coat pocket a packet of slides (photographic) and laid them on the counter. Witness praised them in various ways, and asked for the price of half-a-dozen, and was told 24s. He said he would only take two now, and would give 10s. for them. The defendant Paris said, "I told you they were 5s. 6d. each." On Tuesday he went into Wych Street, and Saunders produced a black bag from a cupboard in the wall. He showed some slides which witness had seen before, and he asked defendant then to show him some books, which he produced. After some further evidence, the accused were remanded.

Spots from Strong Printing Baths.—Within a few days my attention has been called to some spots on paper by my printer. I had not much time just then to devote to the printing department, so I told him to filter his bath well, wash his dishes, and try again; but it would do no good, and it was so bad that no printing could be done (at least with that bath); so I determined to see into the matter, and find out what was the trouble. I filtered the bath carefully, and proceeded to silver. I took the paper up just as slowly as it possibly could be done after silvering, and held it up to the lamp to see how it looked, and found, to my surprise, that the solution was running in lines in every direction on the paper, standing in drops, and drying so. I was convinced now that it could not be dirt, as I had supposed before, because I knew that the bath was perfectly clean; so my next step was to try its strength. I found that it had (by evaporation) run up to 90 grains from 60 grains. Of course I reduced it at once to 60 grains, filtered, and silvered more paper, and the spots had disappeared, and the paper was clean.—*William Zay in Philadelphia Photographer.*

The Fable of the Crow and the Pitcher applied to Photography.—A correspondent of the *Philadelphia Photographer* thus describes a dodge we have often employed when bath solution ran short, without ready means of obtaining a fresh supply:—"The fables of Æsop are probably as well known and oftener read than most books, and may be found upon the shelves of every well-regulated library. Many of them are doubtless familiar to your readers, but, to save reference, the following is offered as a rough translation from a French copy. 'A crow, very thirsty, espied a pitcher; he flew to it with joy, but found the water in it so low that with all his efforts he could not reach it. After various trials, the thought came to him that by filling the pitcher with stones he could raise the water to the top. Acting upon this resolution, stone after stone was dropped into the pitcher, until the water reached to his lips. He drank and was satisfied.' Now for the practical illustration to photography. During a visit made by the writer to a very enthusiastic photographic friend, residing in a part of the country famed for its charming scenery, a condition of affairs arose, making the described fable applicable. After an early start on a bright April morning, the chosen locality was reached, the tent pitched, and all things arranged with the prospect of a successful day's photographing, when, horrible to relate, either by accident or otherwise, the nitrate bath was found to be only half full of solution, which was an unfortunate discovery. Everything else was in perfect order, and the day faultless, but not a particle more of nitrate of silver could be obtained. What was to be done?—give up the expedition, and return home to be laughed at by all the family? 'No, never,' my ingenious friend remarked. A council of war was held, and possibly after as long a deliberation as the famous crow had made, he exclaimed: 'I have it;' and proceeded to drop (not a stone) but a clean glass plate into the bath. The principle was a success, and after four glasses had been dropped into it, the solution was raised to the proper height, room still remaining for the dipper and collodionized plate. The photographer was entirely satisfied, and has many nice negatives to show for his lucky thought. Your correspondent at once noted the novel application, thinking that some photographic crow might be enabled to derive some benefit from this suggestion, and give a large share of the credit to one of Æsop's fables, for a very easy solution of a serious photographic difficulty."

Researches on Resins.—M. Sace observes that resins have been very little studied at all; and his researches recorded in this paper extend to copal, amber, dammar, colophony, lac (or shellac), elemi, sandarac, mastic, and carnauba wax (a resin). The author has studied the more or less degree of readiness wherewith resins are reduced to powder, the action thereupon of boiling water, of alcohol of 86 per cent. strength, of ether, of ordinary acetic acid, of a hot solution of caustic soda of 1·074 specific gravity, of sulphide of carbon, of oil of turpentine, of boiled linseed oil, of benzine, of naphtha, of sulphuric acid of 1·83 specific gravity, of nitric acid of 1·329 specific gravity, and of caustic ammonia. All resins were applied in powdered state; and the solvents, three times as large a bulk as that of the resins, have acted for at least twenty-four hours, at temperatures varying between 15° and 22°. The general results arrived at are briefly as follows:—All resins submitted to experiments fuse quietly when heated, excepting amber, shellac, elemi, sandarac, and mastic, which swell up, and increase in bulk. Only the carnauba wax melts in boiling water; colophony becomes pasty therein; while dammar, shellac, elemi, and mastic agglutinate. Copal, amber, and sandarac do not change. Alcohol does not dissolve amber nor dammar; agglutinates copal, partly dissolves elemi and carnauba wax; while colophony, shellac, sandarac, and mastic are readily soluble therein. Ether does not dissolve amber and shellac; makes copal swell, and partly but slowly dissolves carnauba wax; dammar, colophony, elemi, sandarac, and mastic are readily dissolved therein. Acetic acid does not dissolve amber and shellac; causes copal to swell; somewhat acts upon carnauba wax, and does not at all act upon any other of the resins above named. Caustic soda solution readily dissolve shellac; difficultly colophony, and has no action upon the rest. In sulphide of carbon, amber and shellac are insoluble; copal swells therein; elemi, sandarac, mastic, and carnauba wax are difficultly dissolved therein, while dammar and colophony are readily so. Oil of turpentine has no action upon amber or shellac; causes copal to swell up; dissolves readily dammar, colophony, elemi, sandarac, carnauba, and very readily mastic. Sulphuric acid does not dissolve carnauba wax; all other resins are dissolved and coloured brown, excepting dammar, which becomes bright red. Nitric acid does not act upon the resins, but colours carnauba wax straw-yellow, elemi a dirty yellow, and mastic and sandarac bright brown. Ammonia does not dissolve some of these resins, but causes copal, sandarac, and mastic first to swell, afterwards dissolving them; colophony is easily soluble therein.—*Chemical News.*

To Correspondents.

E. D. S.—To wash precipitates—such as chloride of silver—collected on a filter, it is simply necessary to place the filter, which should be a strong one, in a funnel, and allow a stream of water to flow steadily for a while through the deposit, to remove soluble impurities. It is then left to dry.

An Old Subscriber.—Of those you name, probably No. 4 would be most rapid. In regard to No. 6, one of his lenses was used by the photographer you name; but it was one selected from a dozen after careful practical trial, the remainder being rejected as imperfect. We should prefer No. 2 of the same series as that quoted under No. 1 in your list.

M. A.—The term "Ferrotype" is the name given by the Americans to a collodion positive taken on a japanned iron plate. The general mode of proceeding is somewhat similar, of course, to that in taking negatives, but with slight modifications. A bromo-iodized collodion is used, a nitrate bath rendered acid with nitric acid, shorter exposure than for a negative, and the use of an iron developer with plenty of acid. A good developer may be made as follows:—Fifteen grains of protosulphate of iron, fifteen minims of acetic acid, and two minims of nitric acid in an ounce of water. The development should not be carried nearly so far for a ferrotype as for a negative.

W. R.—We should recommend, for taking clouds, a single lens, and a weak iron developer with plenty of acid. If the clouds are suitable, good negatives should be obtained with these appliances. To secure good effects, however, great care is required in selecting the kind of sky. The clouds should be well defined, and not driving fast. It is desirable that the sky generally should be dark and cloudy; as, if there is much luminous sky, the light enters the lens and spoils the effect. As a rule, short exposure is best. If the image be too weak, it may be intensified; but, as a rule, strong negatives are not required for clouds. The stains of which you speak can scarcely belong to the difficulties in taking clouds, but must be due to other causes, and unless we know their character we cannot, of course, suggest whether they are due to imperfect chemicals or imperfect manipulation. Possibly the stains are really clouds which have moved; possibly they are irregular patches of light reflected into the lens.

Amateu N.—We do not know of any engravings issued for the purpose of copying, to produce transparencies for the magic lantern. If such things exist, you will doubtless learn something of them from the dealers in philosophical instruments, magic lanterns, &c.

Camera.—There are many excellent toning baths, but it is quite impossible to say which is best, so much depends on varying tastes and varying circumstances. The acetate bath is a very common favourite, especially with those who prefer warm tones. The lime bath is extensively used by those who like black tones. There are many other toning baths in use, but these are most extensively used. Many persons prefer Mr. Bovey's formula; you will find it in our last Volume, and on p. 99 of our last Year-Book. A very good formula is given on p. 107 of our last Year-Book. A good and simple bath may be made by mixing a grain of chloride of gold in a drachm of water to the consistency of cream with carbonate of lime (common chalk), then adding four or five ounces of water. In half an hour the bath will be fit to use.

T. H. R.—The "white sediment" at the bottom of your paper bath is probably albuminite of silver, caused by dissolving portions of the albumen in the bath, which has probably become too weak from use. Strengthen it. Send us an example of the faulty print.

S. Wilson.—All the numbers mentioned are in print. They will be supplied at the regular published price. We do not make any extra charge for back numbers.

G. Beaney.—With the exception of the face not having been pressed up to the negative in the pressure-frame, the printing and toning are good. 2. Different printers adopt different plans, but we approve of the plan of using a toning bath over and over. It requires great care to preserve it from contact with dirty fingers or foreign matter of any kind, which might set up decomposition. 3. The time necessary to fix a print in a hyposulphite solution of a quarter of a pound to a pint of water depends somewhat on the thickness of the paper and the character of the print. A thick print will take longer than a thin print; and a vignette, or a print with much white, and therefore much unreduced chloride of silver, will take longer than one fully printed out, and possessing a prevalence of darks. As a rule, from ten to twenty minutes is sufficient for fixation.

J. Andrews.—Thanks. The portraits are capital.

Argentum.—We have not met with any such turbidity as that you describe after adding permanganate of potash to the bath. In some cases we have heard of the formation of very fine crystals in the solution, which were removed by rendering the bath slightly alkaline, and sunning it.

Glenavoniensis.—Your letter and print have been found. The cause of the discolouration, as said last week, is imperfect fixation. When the hyposulphite is too weak, or old and exhausted, the compound first formed on the contact of hyposulphite of soda and the salts of silver is not re-dissolved, and, remaining in the print, decomposes during washing, or on exposure, producing the dirty opaque, greyish yellow, or brown mottled effect of your print. It is necessary that the bath should be strong enough to form the soluble double hyposulphite of silver and soda, which is washed out instead of being decomposed in the process of washing.

Old Photographer.—We do not insert your "crushing" reply, first, because, no matter how richly deserved, we do not wish to "crush" any poor fellow who is down; and second, because, although your sketch of the career described is graphic, and only too damaging, it is really not of much public interest. Your conjecture is correct: the statements are unmitigated falsehoods in all respects, or distorted and falsified portions of facts. It is needless to say we never make any attacks upon the person in question, rarely the most distant reference to anything connected therewith, and then chiefly to point a moral or enforce some necessary teaching. Such reference is always to the facts upon which the moral of any allusion may hang, and not to the individual. The latter subject is not inviting, and only excites, as we have said, our pity and regret.

N. S. P.—There are various modes of using iron for intensifying. One consists in the use of a five-grain solution of iron to which five grains of citric acid and a few drops of silver solution are added. A very excellent plan of intensifying consists in adding to the usual iron developer a few drops of a solution containing twenty grains of nitrate of silver and thirty grains of citric acid to an ounce of water.

J. C. B.—We have no personal knowledge of any one who colours photographic landscapes, nor do we know the prices. Marion and Co. get some work of the kind very well done, and would probably undertake to get it done for you. 2. Newman's "Harmonious Colouring applied to Photographs," price one shilling, will suit your purpose best.

Hyposulphite.—The white spot in the child's dress in card sent is due to a metallic particle—probably iron—in the paper. 2. Your negative has been a little under-exposed, and the light apparently been too dull for successful portraiture.

R. D. N.—Ordinary bee's-wax may be used for encaustic paste, and often is so used; but it would slightly degrade the print if a thick coating were applied. Pure white wax is safest. As a rule, prints so treated should be placed under glass.

E. Fisher.—In stating that you find it impossible to get the background the right colour, you leave us somewhat in the dark as to what colour you desire, and whether you get it too dark or too light. From the examples of cloth you send, we should fancy you probably get the colour too light, in which case, cutting off with curtains some of the light falling on the screen may aid you; placing the sitter rather further from the screen will aid you. If these means are insufficient, try a darker colour for your background screen. Send us a print, that we may see the tint you get.

J. C.—Your advice to "cry aloud, and spare not," is well meant; but we prefer to spare. Our object in not mentioning names should be obvious: we wish to do no personal injury if we can help it, and our references, being only understood by those who know the facts, need do no personal injury whatever until the cap is put on. Besides, it is only the practice of the lowest portion of the press to adopt the habit of personal designation in such cases.

Amateur X.—The lens you name (the No. 1) will answer; but probably the rectilinear of the same maker will answer better still as it is admirably suited to architecture, and, embracing a very wide angle, will suit your special purpose.

Several Correspondents in our next.

Photographs Registered.

Mr. R. Griffith, Truro,
Photograph from a Drawing of the Truro Public Rooms.
Mr. H. F. Scobell, Brighton,
Photograph from Drawing of the Derby, 1869.
Mr. T Heaviside, Durham,
Photograph from Painting of G. Waddington, D.D.
Mr. Holdaway, Shifford,
Photograph—Wedding Group of Col. Sir Edward and Lady Greathed.
Mr. T. Wilson, Ashton-under-Lyne,
Three Photographs of Rev. Grymomfrey.
Messrs. J. and H. Calder, Chelsea,
Three Photographs of Jane Hogg.
Mr. C. Waddington, Burnley,
Three Photographs of Lady Scarlett's Presentation Vase.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 574.—*September* 3, 1869.

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ENLARGEMENTS ON CANVAS BY TRANSFER.

The process we are about to describe is new, simple, and most excellent. We shall describe it in detail precisely as we have seen it worked in the only establishment—one of the largest and most successful in the kingdom—in which, we believe, it has hitherto been employed. Prior to doing so, however, we shall give two or three reasons for our approval of the method and its results:—

I. For large pictures to be finished in oil colours almost all artists prefer the use of canvas, as affording a more pleasant surface for their work, and producing, by its texture, a more satisfactory result than paper.

II. The method to be described is the most simple mode we know of obtaining an image on canvas, and, being a transfer method, all the risk of imperfect fixation or imperfect washing which attends the method of printing on canvas direct is avoided.

III. The enlargement is produced on collodion; and all experience has taught that a developed image on collodion is the most permanent form of silver picture we possess. Indeed, if properly produced and properly preserved, it has never been known to fade. We doubt if such a thing as a faded negative is on record.

IV. Enlargements on collodion are, when skilfully produced, by far the most perfect amplifications known. The delicacy of the film compensates for the tendency to coarseness which the operation of enlargement necessarily produces, and it is possible to produce pictures enlarged ten or twelve diameters scarcely distinguishable from images produced direct without enlargement at all.

With these preliminary observations we will proceed to describe the process as we have seen it worked most successfully, without a hitch of any kind.

The collodion requires to possess a good body. If it be prepared expressly for this operation, it should not possess less than ten or twelve grains of pyroxyline to each ounce of solvents. In the operations under notice, a good commercial sample of bromo-iodized collodion was used, to each ounce of which five or six grains of pyroxyline—or, rather, we believe, papyroxyline—had been added. A plate coated with this was immersed in a nitrate solution in good condition for negatives, a large flat dish being used for the bath. The plate employed was twenty-two inches by eighteen; a life-sized head and bust was produced thereon, enlarged from a cabinet negative. The exposure was about thirteen minutes with a pretty good light from a northern sky. Iron development (somewhat rapid), hyposulphite fixing, mercury and hyposulphite toning, completed the transparency. It is unnecessary to dwell in detail upon the mode of producing and toning the picture. Any of the known modes of producing a good positive image on collodion may be employed, and probably that we recently described, with pyrogallic acid development and gold toning, would be found the most efficient of any. But it is important to bear in mind that a collodion of good body is absolutely necessary for success in the next operations.

A good transparent positive on collodion having been obtained, the transfer to prepared canvas is the next operation.

The prepared canvas, as sold ready for the painter, is employed. The somewhat greasy and repellent or waterproof surface requires first of all to be removed. This is effected by means of a warm solution of common carbonate of soda, applied with a piece of flannel. After well scouring with this solution until clean water flows freely over the surface, it is thoroughly well rinsed, and allowed to dry. The glazed surface of the prepared canvas will now have acquired a matt surface of slightly absorbent character. This is then treated with a weak warm solution of gelatine, containing from ten to twenty grains to an ounce of water, applied with a sponge, and suffered to dry. The canvas prepared in this way may be kept ready for use.

We now return to the collodion enlargement, which has been fixed, toned, and washed. It is now placed on a levelling-stand, and a strong solution of citric acid in water—the exact strength is unimportant; say thirty grains to an ounce—is poured over it, and allowed to remain a few minutes. The action of the citric acid is two-fold: it restores the toughness of the film, which has become somewhat powdery in character from the action of the mercurial solution, and it loosens the film from the glass. After a few minutes the citric acid solution is poured off the plate, and preserved for subsequent use. The film is now very thoroughly washed under a tap for five or ten minutes, during which time it will have become completely loosened from the glass, upon which it will readily slide about. Should it not become loose during the washing, it must be again treated with the citric acid solution, and again washed. If a tardiness to loosen be noticed, the edge of the film may be lifted, and a gentle stream of water suffered to run underneath.

A sheet of tracing-paper the size of the plate is now taken and placed upon the film. If two persons can be engaged in the operation, some little trouble in subsequent operations will be saved if the tracing-paper is first wet and suffered to expand; each person then taking hold of two corners, the tracing-paper is gently laid upon the film. If one person only is engaged in the operation, the tracing-paper is more easily managed dry in the first instance, as there is less difficulty in handling it so as to get it down flat on the film when a large plate is used. One edge of the collodion film is then turned over the tracing-paper, and the whole, paper and film adhering, lifted by a sliding motion off the glass, and placed, film down, on the prepared canvas. It is then covered with blotting-paper, and thoroughly well rubbed down, the tracing-paper—which has simply served as an aid to lifting the film, and, by its transparency, permitted the position of the image to be seen in placing it on the canvas—is then lifted away, and the transferred film left to dry.

When dry, this film adheres so perfectly to the prepared canvas that it cannot even be scraped away without injuring the surface of the canvas. It cannot be removed without scouring with hot water or a hot solution of soda. In no instance has it chipped, or exfoliated, or in any way shown any tendency to leave the canvas, except in an experimental case in which the prepared surface of the canvas had not been treated with a soda solution in the way we have described. So far as we can judge, the adhesion is perfect, and the result in every way satisfactory.

As will readily be understood, the head and such other portions of the figure as may be desirable can be thus transferred to the canvas, and such other portions as may be required can easily be painted in by the artist. In the example we have been describing, a life-sized head and portion of the bust filled a twenty-two by eighteen inches plate, and this, transferred to a canvas twenty-four by twenty inches, gave more space for background and figure.

Taking the balance of advantages and disadvantages of this and other processes for securing photographic enlargements on canvas, this appears undoubtedly most simple and easy, and, of all silver processes, the most promising, we think, as regards permanency, inasmuch as the canvas—the final basis of the picture—never comes into contact with silver solutions or fixing solutions, difficult to eradicate from a substance like painter's prepared canvas, when once its surface has been impregnated or saturated with the materials employed.

* * *

ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

PART II.—SILVER PROCESSES—*(continued.)*

A SHORT time before the publication of Mr. Fry's process, a method was briefly described by Mr. Stuart, of Glasgow who showed some good results by the plan, at a meeting of the Glasgow Society. In his case the ivory was soaked in a solution of gelatine, with the view, we presume, of filling up the unequal porosity. His mode of operation was as follows:—The ivory is to be well polished with finely-ground pumice-stone, and to be entirely free from scratches It is then soaked in a solution of gelatine, ten grains to the ounce of water, *using this hot.* When dry, it is floated on a solution of chloride of ammonium, four grains to the ounce of water, to which is added one and a half grains of gelatine. After lifting it from the salting bath, it must be dried before the fire, so as not to let the salting bath go too much into the ivory. It is then sensitized with a sixty-grain solution of ammonio-nitrate of silver, either by floating or brushing, *and dried immediately afterwards.* On the ivory thus prepared, a print from a negative is obtained in the usual way, and it is then toned and fixed by any of the processes. The fixing of the picture requires about an hour. The picture is to be well washed in hot water, and to be left under running water for four or five hours. It will be seen that here the necessity for care in fixing is recognized, and long immersion in the hypo bath prescribed as the means of securing perfect fixation.

In the subsequent silver printing processes we shall describe, collodion is the medium employed to secure an even distribution of the sensitive coating on the surface of the ivory. The next is one by Mr. McCraw, of Edinburgh, a gentleman whose name has for many years been associated with experiments in various photographic printing processes. At a meeting of the Edinburgh Photographic Society, held a few months ago, he described his experiments in printing on ivory.

McCraw's Process.—In this process a tablet of prepared ivory is coated with a bromo iodized collodion, and excited in the nitrate bath as in the ordinary wet collodion process. The collodion film is then wiped off the ivory, which is left with an even uniform yellow surface. This is permitted to dry, and the tablet is exposed under a negative, to which it may be attached for convenience of examination as in Mr. Fry's method, or it may, if thin enough and of sufficient size, be bent back so as to permit the progress of printing to be seen.

According to Mr. McCraw, the ivory so prepared prints rapidly, and yields a fine image, which tones readily in a weak alkaline chloride of gold bath, and is fixed by immersion in a fresh solution of hyposulphite of soda. On the question of the permanency of the pictures so produced, we must allow Mr. McCraw to speak himself. He says:—

"But I must not disguise the fact that, although the large painted specimen shown, which was done in this way, and is now not less than ten years old, speaks well for the permanence of such prints, having been subjected to a prolonged exposure to summers' suns and winters' colds in a show case, it is a matter of difficulty—and, perhaps, uncertainty—to know, in some cases, whether the chemical salts, of whatever kind they may be, are thoroughly eradicated, and, before putting work upon them, it is absolutely necessary to test them in strong light for a day or two, occasionally wetting the surface—to know, in short, whether they have been properly fixed. If the latter, this treatment will only tend to make them clearer; but if they become darker, or if the grain of the ivory begin to appear offensively distinct, I consign them remorselessly to a bath of cyanide, which quickly causes the picture and everything disagreeable to disappear; and, after due washing and giving the plate a new surface by scraping, &c., the old plate will generally be found to be more depended upon than one that had not been used before."

To secure any certainty of perfect fixation and consequent permanency in a process like that described, in which the tablet of ivory is immersed in a silver bath, and necessarily becomes saturated with the solution, we cannot but think that something more energetic as a fixing agent is required than the ordinary fresh hyposulphite bath. A hot and concentrated solution of hyposulphite of soda, or a dilute solution of cyanide of potassium, would afford more certain results, and a slight amount of over-printing would permit the reducing action of these solutions to operate without spoiling the prints.

The *Collodio-chloride Process on Ivory.*—The next process is one to which we have given much personal attention, and with considerable success. In it our own collodio-chloride of silver affords the sensitive coating, and the process may be worked either with a view to the collodion film being removed, or remaining as a part of the image. No modification of the collodio-chloride formula is required: a sample of collodio chloride which works well on paper or opal glass will give admirable pictures on ivory. It may be as well, however, to restate here the details of a formula we have used with success. Take two ounces of plain collodion of a character giving a powdery adherent film. It is desirable that the solvents should be highly rectified. To this collodion add thirty grains of nitrate of silver dissolved in half a drachm of distilled water, and shake well, Now add, a drop or two at a time, six grains of chloride of strontium dissolved in a drachm of alcohol, and two grains of citric acid dissolved in half a drachm of alcohol.

One condition is of vital importance: to secure the best results the collodion should not be made of a sample of pyroxyline giving a very horny, repellent film. The sample we have used is such as we should choose for a negative collodion, neither very powdery nor very horny. It adheres perfectly to ivory, giving a hard surface, less easily scratched or abraded than the same film on glass, and the appearance of the image does not differ perceptibly from one on the surface of the ivory itself without collodion intervening. If it be desired, however, to paint on the surface of the ivory without any intervening colouring, the collodion may be removed by means of ether, and a less vivid image will be found underneath on the surface of the ivory itself. Two things will require attention in case this method of removing the collodion be adopted. The collodion *must* be powdery, or no image will be formed on the ivory: a horny collodion will retain the image within itself, and scarcely a trace will be found on the ivory surface when it is removed. And, further, it is necessary to print somewhat deeper in such case than when the collodion film remains on the ivory.

The mode of working is similar to that on opal glass. The prepared ivory is coated with collodio-chloride, and, when dry, is printed, toned, and fixed in the same manner as the opal glass picture, with the exception that a saturated solution of hypo and a prolonged immersion is employed. The film adheres with sufficient tenacity to render any edging of varnish unnecessary. A more perfect washing, to remove the hyposulphite, is necessary than with opal glass, because of the more absorbent character of the ivory.

We have found ivory pictures fixed in a fresh concentrated solution of hyposulphite of soda remain without change, whilst after treatment in an ordinary fixing bath they have gradually darkened under the action of light. We should prefer, as a rule, to over-print, and so permit a final treatment with a dilute cyanide solution, which, in reducing the depth of the image, would also dissolve the organic compound which seems to resist the action of hyposulphite of soda. Copious washing in warm water finishes the operation.

The exact strength of the cyanide bath which will answer best remains to be ascertained. We have tried one containing from half a grain to a grain in an ounce of equal parts of alcohol and water. The operation requires carefully watching, and, as soon as the image is reduced to nearly the right depth, but before it is quite light enough, the tablet should be plunged in a dish of water and well laved, or, better still, washed well under a stream from a tap, as the action of the cyanide proceeds rapidly, and is not stopped immediately without rapid and vigorous washing.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The British Association — Perfection of Processes — Uncertainty of Dry Processes — Carbon Printing — Cyanide Poisoning — Photo-Crayons — Indecent Photographs — The Boat Race — Transparent Paper — Photographic Dodges and Sea-Gulls.

I presume that as photographic questions no longer come for discussion in the annual scientific parliament held by the British Association, it may be assumed that all has been discovered in relation to photography which it concerns scientific men to know. The assumption is rather a bold one, I know; but as year after year we find less and less attention given to photographic subjects at the Association meetings, and enquiry into questions relating to its theory and practice, at one time common, gradually ceasing, the conclusion naturally follows that everything worth knowing has been discovered, or that the points still unknown are not of sufficient importance to demand the attention of men of science. Certain it is, that the meeting, or series of meetings, just concluded at Exeter has been singularly devoid of special photographic interest. The truth appears to be that photography has ceased to be a subject of scientific investigation, and passed into the position of an agent aiding scientific research. Its practice—especially in the wet collodion process—has become so steady and accurate that it can be used with certainty wherever trustworthy records are required; and there are no new discoveries or old moot points of sufficient importance to raise discussion amongst men of science.

In the ordinary practice of the wet process there is probably little left to desire. When one examines portraits by men like Salomon, or T. R. Williams, or Robinson, or Hughes, or Blanchard, or Reutlinger, or Milster, or Angerer, or many other good men; or landscapes by Bedford, or England, or Wilson, one is tempted to ask, what more can be desired? And when anyone tells me that all this is effected by working on a wrong principle, I am sorely tempted to recommend communicating with the marines. In printing, the prospects, if not quite the realization, seem nearly as perfect. Silver printing leaves little to desire except permanency. Carbon printing in Mr. Johnson's hands seems to promise everything that can be asked. Woodbury has been making wonderful progress in excellence and certainty, and Albert has sent out mechanical prints which are marvels of excellence. Looking at these facts, what was there left worthy of photographic research to bring before the British Association? "A perfect dry process," some one answers. Well, there is certainly something left to desire there. Success hitherto has depended more upon perfect manipulation than anything else. In the hands of men like Mudd, Gordon, England, Soulier, and a few others, a variety of dry processes produce perfect results, and in the hands of many less skilled men the most perfect processes produce failures. I fear that the dry process which shall equal the wet in simplicity, certainty, and sensitiveness, will remain a question for research, should any member of the Association desire one, for some years to come.

Speaking of the steady progress of photography, in a recent review, the *Times* refers to the practice of carbon printing as *un fait accompli*:—"Not so many years," it remarks, "have passed but that many of our readers can remember the bewilderment of Miss La Creevy and her brothers and sisters, when suddenly it was discovered by Mr. Fox Talbot and others that the rays of the sun were able to perform the work by which our miniature painters gained their livelihood. Their skilled and patient labour—at all events, that of the great body of them—was at once superseded by an instantaneous process, which, bringing the sunlight into action upon a surface prepared to receive it, produced the most astounding result of a perfect transcript of the original. Still, for some years after its first discovery—and, indeed, after its first practical application—photography remained in a state, if not of infancy, yet of childhood; and it is only now, after more than a quarter of a century has passed away, that our cartes-de-visite and copies of works of art are attaining such perfection as is implied in the permanence which carbon can afford." From what I have learnt of the recent improvements by Mr. Johnson, not yet fully brought before the public, it is not improbable that carbon printing will really supersede silver for all important work.

The legislature can regulate the sale of poisons, and determine who shall sell them, and under what conditions; but it is powerless to decide how they shall be used, and how far accessible after they have been sold. What a terrible pity that the deadly cyanide is not banished from every photographer's laboratory! "How oft the sight of means to do ill deeds makes ill deeds done!" The unhappy, distraught girl, who recently rushed unbidden through the gate of life, found facile aid in cyanide to ope the gate. If the ready means of self-destruction had not been at hand, time for better thoughts might have supervened, a young and hopeful life might have been spared, and much bitter sorrow prevented. Photographers, banish or lock up your cyanide!

It is marvellous how much we all are apt to move in grooves. I have been in conversation with more than one or two portraitists lately who have agreed with me in warm admiration of Sarony's photo crayons, and I have been informed that the public have admired the specimens greatly. But I have been astounded to learn, as a pendant to these remarks, that the photographers in question—and I believe they are types of many—were not working the photo-crayons, but absolutely losing orders. In some cases the answer to my wondering enquiry, in the words of Artemus Ward, "Why is this thus?" has been, "Oh, I have not facilities for working them without much trouble." In another case, "I am so busy in ordinary work that I cannot spend the time in attending to novelties." In each case I pointed out that Mr. Sarony was doing the work for his patentees on sharing terms, and stated how exceedingly perfect the recent specimens I had seen were. Although in each case the photographers to whom I was speaking seemed aware of this fact, they had never until then thought of applying it to their own special cases. It did not seem to have occurred to them that they might oblige their customers, and increase their own profits, with scarcely any trouble or risk whatever. I fancy that this is too often the case with English photographers: they are strangely slow to take up novelties, or engage in new enterprises. The cabinet portrait has slowly won its way, and is now all but universal; but although it originated in England, it was common on the Continent and in America long before it had been generally adopted here. I might easily illustrate the same idea with many other examples in photography.

I much regret to see the frequency in the police reports, in the daily press, of the heading "Another Seizure of Indecent Photographs." Is it not a sad shame and pity that a noble art like photography should be thus prostituted? All indecent pictures are vile enough, but photographic renderings of indecent subjects possess a grossness which is loathsome. It is little use declaiming against such things in these pages. I fear, for I question very much whether these photographs are produced in this country; they are, I am informed, almost exclusively imported from the continent. I should have small mercy upon producers, importers, or vendors who thus pollute society with an offence which is without excuse, justification, or palliation of any kind. Slightly modifying Pope's couplet, one may very truly say,

> "Immodest prints admit of no defence,
> For want of decency is want of sense."

I have seen some capital photographs of the two boats' crews, taken by Sir Aubrey Paul, Bart., who was also judge of the late race. The Harvard men who struggled so gamely and only just lost, look older and stronger men than the Oxford crew, and might, from the photographic presentment, have been expected to have excelled in staying power, whilst the more youthful and less thoughtful looking Oxonians might be expected to have surpassed in impulse, instead of the steady judgment and sober excellence of style which won the race. The portraits produced by Sir Aubrey Paul consist of various groups of each crew in boating costume, and are very capital.

I have seen an example of transparent paper, lately, as delicate and perfect as the collodion pellicle which was some time ago introduced by M. Marion as "vitrified india-rubber." This paper, I think, will probably find valuable photographic use. I hope on some other occasion to say more about it.

I notice that the wish I expressed, that Messrs. Robinson and Cherrill would explain a little more of the mode in which their sea-gull picture was produced, has not been so productive as might have been desired. They seem disposed to "chaff," and talk about the virtues of a fifteen-grain iron developer, and of head-rests for gulls. It is most probably a case of the Pindaric apple-dumplings, destined, however, to puzzle others besides simple monarchs. What a pity that the foolishness of one or two persons who believed that the intelligence of ordinary printers could solve all useful secrets and dodges, should have the effect of depriving photographers, who are gratefully willing to be taught, of further hints from skilful and inventive photographers.

MASKS AND FACES.

BY PROTAGORAS.

Part IX.—"Brown" Unfolds His Views.

"Well, 'Brown,'" said I, the next evening after we had our last conversation, "you promised last night that you would explain yourself, and offer a justification for the damaging statements you chose to make about photography. Now is your opportunity. On the condition that you permit me a full and copious reply, I am willing to give you an uninterrupted hearing."

Brown.—"As you are so unusually complaisant, I will avail myself. It is not often I get you in such good humour to listen to my heresies. My first and foremost objection, then, is to the venal and sordid character that pervades photography. All its noble capacities and brilliant possibilities are crushed under the universal desire to get something out of it. It is debased into a mere vehicle of trade, an article of commerce. The curse of lucre seems to rest on it. You have established all over the country an organisation for its practise, and the object of that practice is money-getting; money-getting in the lowest and most vulgar manner. Of course I am more particularly addressing myself to those who make it a trade. But when I speak of those who make a trade of it, I feel I allude to almost all those who practise it. Time was when a considerable section of the intelligent community followed photography for its own sake, for the innocent pleasure they obtained in its practice; but since it has been adopted in every town and village by the waifs and strays of society, by people who, failing in everything else, have found a congenial occupation in it, things have changed altogether. Amateur gentlemen do not choose now to be identified in a common pursuit with those whom they do not respect. To be a photographer is to be identified with a low, mean, hungry, and *touting* class of the community."

Protagoras.—"Excuse me; this is but a 'snobbish' reason why amateurs should give it up. Gentlemen should not abandon it because poor people use it. I am sure amateurs, as a class, are not 'snobs.'"

Brown.—"Don't interrupt me; you promised me a full fling, and I intend to have it, or I shall not speak."

Protagoras.—"I beg your pardon; pray go on."

Brown.—"This mercenary spirit had its origin in the cheap glass positives, and it was established and perpetuated in the still cheaper cartes-de-visite. I look on Archer as having done a grave and serious injury by the introduction of collodion. By it he made 'light-painting' so simple, so easy, and so cheap, that it was rapidly taken up by a class of persons who, without any art or science themselves, ought never to have had admission into a profession based on both art and science. The fact is, Archer made the practice of photography *too easy*; the manufacturers and apparatus people made the materials too cheap; and thus, in these vile days of free trade and unlimited competition, a set of unprincipled people took possession of the practice of photography simply for gain. The ignorant, greedy public were speedily tempted by the cheap article, and rushed in a mass to receive the advantage. Then more rushed in to get an easy and lazy livelihood by taking the vile things they called photographs, and, the mania being on, a photograph, no matter how bad, was always recognized as a photograph. The greater the demand, the greater the supply, so that an army of so-called photographers were called into existence. By-and-bye, however, even the ignorant, greedy public became satiated, and the demand declined. Then came the struggle among those who thought they were always going to live in clover by dyeing their dirty fingers with lunar caustic. The drugged and nauseated patrons are then tempted to return by reduced prices; lower and lower the prices go, but the public return not. The few persons who are photographed, however, obtain what they want at the low charge. Thus the debased standard becomes established. That abominable condition, quantity, is offered as the bait—so much *a dozen*, or a *hundred*, or a *bushel*, if necessary. Any condition except the right one—quality—is offered. If a superior person among you opens a shop, and, by virtue of good work, succeeds in securing a fair demand for his skill, depend on it some venal wretch will start in opposition to him next door—perhaps an assistant whom he has formerly employed—who, imitating his style, offers his products at half the price. Thus the stupid public obtains the idea that a photograph is, or ought to be, a very cheap thing, and that they are imposed on if they do not so obtain it. And to whose fault is this chargeable? Is it not to the miscellaneous lot who dabble for gain in cyanide and silver? Why should they adopt the suicidal policy of trying to undersell their neighbours? Do not their neighbours undersell them in return, and do they not all come to the ground together? And do the public thank them, or patronize them the more for it? Certainly not.

"It is not merely photographers I blame for thus allowing their art to be run down and debased; the evil is also due to the general public, who run after the cheap things. The well-worn Peter Bell quotation may be used once more :—

> "A primrose by a river's brim
> A yellow primrose was to him,
> And it was nothing more."

So a photograph is a photograph, and it is nothing more to the Peter Bells of ordinary daily life—the average ignorant public But while they do not distinguish between one photograph and another, they are keenly sensitive to the difference of the prices charged. Why should one grocer charge more for a pound of sugar than another? Sugar is sugar. And why should one photographer charge more than another? A photograph is a photograph, and it is nothing more. And the photographers pander to this, and under-cut each other until the thing runs down to the dogs."

Protagoras.—"But this does not affect you! *You* are not a professional photographer. One might think that *you* had suffered by this running down of prices."

Brown.—"It affects and degrades everyone and everything connected with the art. To me it matters nothing in a pecuniary sense, but, as a lover of a rising art, it vexes and annoys me considerably, because it limits the vocation to mean and sordid minds who use—or, rather, abuse—it for their ignoble ends. Why, the best of you are injured by this suicidal policy. You all suffer by it; you suffer in purse, in position, and in self-respect. You have to look for quantity, not quality, to remunerate yourselves. How many negatives a day can you take, and how many prints from each negative can you offer so as to make it pay? That is your constant and necessary enquiry. Did Titian, Vandyke, or Holbein so enquire? Would their works now have such value had they so enquired? No; you have debased your art to a matter of trade—free trade—and competition has crushed you. Why, as a class, do you not make permanent prints? You have the carbon process, and Swan has shown what beautiful things may be produced. You know the real reason is that the process is a more troublesome one; it would take more time; you would have to employ more skilful printers; all of which means that the process would be more expensive, and cheapness you have recognized as the order of the day. That's what's the matter. Therefore I say, let it go; let the art descend; let the chimney-sweepers and shoe-blacks have it, and let them revel in their congenial black art. Hence, I say, I have no faith in present photography."

Protagoras.—"Of course I reserve my reply to all this; but will you explain what you meant by saying that you believed in the photography of the past, and in that of the future?"

Brown.—"The photography of the past may be summed up in two exploded processes: Daguerreotye and Calotype. I had faith in both, and I regret to see they have passed away. The one admirably represented the scientific, the other the art, aspect of photography. More pure, delicate, and stable portraits have never been produced than by Daguerreotype, fittingly, therefore, representing scientific photography. More sweet and charming results have never been produced than were obtained by the Calotype; hence it properly represented artistic photography. But the hybrid utilitarian collodion snuffed them both out. Then began the photography of the present, with all its cheap vulgarity. Archer broke down the barriers which hitherto had protected photography, either as a gentlemanly, artistic amusement, or a respectable profession. Archer opened the flood-gates: and the stream, that previously was preserved at a high level and between respectable boundaries, suddenly overflowed the whole country, carrying everything down to a common level. The photography became thoroughly vulgarised; for what art could become otherwise when every showman at a country fair, loafers from the Seven Dials, cheap-jacks from Whitechapel, ne'er-do-wells of all sorts, could earn a lazy livelihood by shilling glass positives. And what was a glass positive? A bit of window glass with a collodion film on one side and a dab of black varnish on the other. Then followed all the modern photographic horrors—touters and doorsmen, albuminized paper and sulphur toning, the Sunday photographic nuisance, pirating works of art, obscene stereoscopic slides, violence and robbery in photographic dens, copying at two shillings a dozen, poisoning by cyanide, and all the other abominations that naturally followed in the train of the common, debased, and vulgarised cheap photography."

Protagoras.—"You had a pretty good inning that time. My reply is to come. I shall remember it all. Now tell me what you meant by saying you believed in the photography of the future?"

Brown.—"I believe present photography will become cheaper, commoner, lower than it even now is, so that the bulk of people will give it up for something they can get a better living at; and so it will work itself out. I daresay it will not be quite extinguished, but the present fashion of being photographed will altogether pass away, like powdered wigs, pig-tails, crinoline, and other popular manias. When all this shall have occurred, and cartes-de-visite become a matter of history, I think a new invention will arise, based on the fresh discoveries and the increased knowledge that will then have arisen. I think the power of light—*light-force*—will be better understood; that subtler means and more delicate processes will be invented; that these will necessitate more highly skilled persons to practise them; and that the results will be correspondingly more perfect. I believe, also, that the public will by that time have so advanced in intellect, morals, and manners that they will be willing to pay a good price for a valuable article, and that they will be able to distinguish the beautiful and good from the cheap and nasty. I believe that photographers then will not be the refuse of society; that they will be real artists, and not mere *hartists*; that a highly respectable vocation will exist, to which young men may be trained, and in which they will find full scope for their varied ability. I believe then to be a photographer will be synonymous with being a person of skill, intelligence, culture, and ability. Such are my beliefs of what I think may yet be done; but with things as I now see them I have no such hopes. Therefore, my faith in photography rests in the indefinite future."

Protagoras.—"Well, Brown, you can't grumble at not having had a good say. It is hardly necessary to state that I do not agree with you. What you have said that is true is not new, and what is new is not true; so it don't matter. Next week it will be my turn, and if I do not make you eat your words I'll eat my head We'll suspend this subject till then."

Brown.—"All right, my boy. We shall see."

SKETCHES OF TRAVEL, FROM A SUN-PAINTER'S PORTFOLIO.

BY STEPHEN THOMPSON.

No. 6.—Streets in Normandy.

At this season of the year many readers of the Photographic News are doubtless meditating where they will pass their annual holiday, desiring, at the same time, to add a few new negatives to their collections by an expenditure of just that amount of labour, and no more, as will suffice to give a zest without spoiling a holiday. Normandy, being so near at hand, will afford all they desire; and dry plates—the exposure of which supplies sufficient interest without involving any great fatigue—will be found, on the whole, to give the best results. There are two reasons why dry plates, taking them for all in all, balancing advantages against disadvantages, will probably give the best pictures; namely, the blurring from moving figures, much more incidental to the wet process, and the difficulty in finding any suitable spot to set up a tent with safety, except in alleys or courts reeking with pungent odours, and too lofty and narrow to admit sufficient light through the yellow window to work with any comfort and certainty. To this may be added the not at all improbable chance of finding it upset on returning from the exposure of your wet plate, albeit hot and flustered with futile efforts to keep the numerous passing figures from spoiling the picture.

Much has been written on the "management of the sitter;" more might be written on the "management of a crowd." National traits are exhibited, too, even by a crowd. A French crowd is generally less rude than an English one composed of the same class. An Italian crowd is distinguished by its persistent begging propensities, which, if once yielded to, draws down upon you an avalanche of extended hands in front of the camera. Your wiser plan is then to give up operations at once, for it is all over with you, for that day at least. For downright coarse rudeness and stolidity, commend me to a crowd of Flemish boors, in some of their small provincial towns. *User de finesse* was the only plan I found avail me. To appeal to them is useless. Carefully focus and expose an empty dark slide; then remove it and leave your camera standing, but not without some one in charge of it. Take refuge in the nearest *tabac* shop, which is sure to be close by, get a cigar, sit down as if you meant to make a day of it, and tire them out. Twenty minutes will usually tire out the patience of a crowd; seldom does it extend beyond half an hour. When the proper moment arrives, place another plate in the camera, and, without re-focussing, expose directly, before there is time for any re-accumulation.

Streets in Normandy has this paper been named, because of the comprehensiveness of such a title, for it is literally in the streets that everything architectural and picturesque in subject is found. Shops are built completely into cathedral walls, and money-changers set up their counters almost within the temple gates. It is not at all uncommon to see cordonniers' stalls and vanniers' stalls glued on to the walls around the porch like so many swallows' nests.

It is much to be regretted that so many of the old gabled houses in the streets of Normandy have disappeared, and that the remainder are fast following to make room for modern improvements. An essay might be written on the physiognomy of houses, individually and collectively. Streets are made up of a conglomeration of these units, and almost always the aspect of the street is decided by the physiognomy of two or three of its parts, which give it a decided character, and the remainder is composed of mild characterless inanities, genteely mediocre, or hopelessly feeble, or of no particular character at all.

Broadly speaking, there are two classes: the autique, and the stuck-up species, smooth-faced, uninteresting, and modern, without seam or wrinkle, prim, decorous, and *genteel*. Far better I love that old overhanging, double-gabled tenement, though a little out of the perpendicular, with a stoop in one of its shoulders, and a rick in its neck that has been caught in the long night-watches of a couple of centuries. Its head is bent forward—not backward—meditatively, and not without a certain elderly grace; and under the eyelids of its broad eaves two little old diamond easements seem heavy with an introspective gaze, as if dwelling on the days that are no more. Let us take a few of them, types of their class, no matter where, and sketch them reverently and lovingly. Here is one. The mellowed tones of the old timber-framed gables delight the eye as mere pieces of colour, but their seamed and wrinkled face is full of quips and cranks and strongly-marked individuality. There is an expression in the acuteness of that right-hand gable, and an odd crank lurks in the warped and twisted curve of that richly-carved barge-board. There is a generous fullness in the eaves, like the noble breadth of skirt and amplitude of sleeve in the garments of Sir Roger de Coverley, which contrasts painfully with the meagreness of modern attire. Another, next to it, is broader, sturdier, but not half the height. It is quite as old as the other, but looks as if it would last a century longer. It has a less acute angle, one window only above, and, far down, a broad and very low one, which, at some distance off, does for the expression of the old house front what the mouth does for the human countenance, and lends it a decidedly comical expression, contrasted with its neighbour's half-sad, patrician melancholy. After a private residence or two of the characterless kind, comes a succession of ten or a dozen shops, which seem to have settled down altogether like a flight of sparrows, and, like them, keep up a perpetual chirruping, and a going in and out of their nests. Just past them stands a grave and reverend signor, a patriarch among these stationary tents, full of dignity, which finds expression in ample width of doorway, with a depth of shade like the shaggy brown of wisdom's porch. There is no puckered window or skimped corbel; all is full and generous, and stiff as a recorder's silk gown. Its very look awes small people. Little boys never play marbles just there, nor hide on the doorstep; not that they have ever been forbidden to do so, but the expression of its façade is sufficient. They would as soon think of playing in the beadle's hat, or shooting cherry stones at the *sergent de ville*.

In Rouen the sun-sketcher will find his grandest cathedral subjects, but the celebrated old picturesque houses of Rouen exist no longer, save in the unsurpassable drawings of Prout. At Caen there are still a few good ones left on the north side of the Church of St. Pierre, and two richly-carved timber-framed houses in the Rue St. Pierre, though the lower portion of them has been converted into shops. Lisieux, the next town worth staying at, contains the most picturesque street yet remaining in Normandy. It is extremely narrow, but a lens of extra wide angle will make something of it. St. Lo, though it has little else, has yet one of the finest subjects of the *ancient maison* class anywhere to be found: the Maison du Poids Royal, near the Cathedral, a very picturesque subject for the camera. At St. Lo the railway terminates. Diligences, however, run daily to Coutances, which possesses one of the most interesting cathedrals in Normandy, in the early pointed style, "complete in conception and execution." The original edifice was consecrated in the presence of William the Conqueror. From Coutances the tourist can pursue his way to Avranches and St. Malo, and, after visiting Dol and Mount St. Michael, return by sea, *via* Jersey and Guernsey, to Southampton. Lenses of short focus and extra wide angle will be specially needed everywhere in Normandy. Indeed those appliances have alone opened out the largest portion of the picturesque subjects to be found in these old Norman towns.

THE ROYAL CORNWALL POLYTECHNIC EXHIBITION.

[FROM OUR FALMOUTH CORRESPONDENT.]

The Royal Cornwall Polytechnic Society opened its thirty-seventh annual exhibition on Friday, the 27th ult. In many respects it is thought that it has not maintained the prestige of former years. As in some other departments, the photographic display was not equal to those of some former exhibitions; there were, however, many pictures which the most cynical eye could view with feelings of great pleasure. Among these was a vignette of a lady by Haupstangel, of Dresden, the appearance of which was more that of a very fine steel engraving than a photograph, the negative obviously having had extensive and fine touching; these, with some very fine Venetian views by Naya, were lent to the exhibition by a gentleman of the neighbourhood.

Of the professional pictures exhibited, the most noticeable were two frames of photo-enamels by A. L. Henderson, London, which well deserved the first-class silver medal awarded them as an extra prize. It is seldom pictures are seen which exhibit so much delicacy, at the same time vigorous and round. Mr. England exhibited a number of his exquisite Tyrolese views; and Mr. Lafosse, of Manchester, two frames of vignetted cartes-de-visite, eighteen portraits and art studies, and two photo-crayons. The art studies were particularly fine, and, as such, were—if not superior—second to none in the Hall. For the cartes-de-visite he was awarded a first bronze medal.

Mr. Slingsby, of Lincoln, sent two portraits, which were fine untouched specimens of art, and for one of them the first-class silver medal for the best portrait or figure picture was awarded. One of these portraits was that of a lady in a white dress, which was admirably subordinated by the management of light so as to give full value to the head, which stood out to eye in full and bold relief without harshness. There were also, from the same studio, two composition pictures: the first, "Early Summer," an attempt to illustrate the following lines:—

> "Now come the rosy June and blue-eyed hours,
> With song of birds, and stir of leaves and wings,
> And run of rills, and bubble of bright springs,
> And hourly burst of pretty buds and flowers,
> With buzz of happy bees in violet bowers." *Webbe.*

The picture represents a group of rustic childern seated on a ferny bank, after gathering may and cowslips, while the eldest one is engaged in stringing for tossing balls, while the youngest urchin has fallen asleep upon the lap of one of the other girls. The eye is carried into the distance by a range of richly wooded hills. In the centre is a may tree in full bloom, which, backed by a bit of rich foliage, throws up the group of figures. It is an exceedingly creditable production, as, although the scene is open and sunlit, the necessary character is preserved. The picture is brilliant and rich, and not killed, although placed in juxtaposition to a number of rich portraits. But some were more pleased with the less ambitious picture of "The Milk Maid":—

> "Her cleanly pail the pretty housewife bears,
> And singing, to the distant fields repairs;
> And when the plains with evening dews are spread,
> The milky burthen smokes upon her head." *Gay.*

A very clever production, but rather too even in tone.

Colonel Stuart Wortley exhibited nine sixteen by fourteen portraits, in a manner novel amongst professional photographers. They are distinguished by massiveness and richness of style. These were awarded, as an extra prize, a first-class silver medal.

Mr. Hubbard sent some very clever pictures, of which one, "Pensive Thoughts," was marked with the award of a first bronze medal. "Preparing for Dinner" is equally deserving of the honour. This picture, if it only had natural colour, might have been mistaken for an interior by an old Dutch master, so well is the idea photographed.

Mr. Wardley, of Manchester, sent seven very fine large landscapes of Conway Castle and its neighbourhood, and was awarded the first silver medal for the best landscape. No. 501, Chorley Old Hall, and Nos. 504 and 505, Conway Castle, are particularly fine specimens.

Mr. W. Brooks, of Penzance, was awarded the bronze medal of the first class for his "Land's End Road, near Penzance," but which might have been more worthily appended to "Bleu Bridge," a charming and brilliant landscape; while "Kynance Cove and the Lizard Head" was equally effective in the rendering of the peculiar cliffs, rocks, and sandy beach of that delightful locality. Among Mr. Brooks's collection was a print of the "Mulfra Quoit or Cromlech," near Penzance, showing also the eclipse of the sun; and in the same frame was the negative to be seen by reflected light.

Mr. F. H. Warlich exhibited a very excellent painted enlargement of H. R. H. the Prince of Wales, which the hanging committee, unmindful of His Royal Highness being the vice-patron of the Society, hung in an out-of-the-way corner, the refuge for the destitute.

Among the other exhibitors showing good work were Messrs. Fradelle and Leach, London; E. Cocking, London; M. Row, Redruth; Warwick Brookes, London; E. Eccles, Bury; W. H. Dunstan, Falmouth; and N. Briggs, Leamington. With regard to the latter gentleman, the judges said that he "is again an exhibitor of some very excellent works, but, having received a medal last year, is excluded from one on this occasion by the rules of the Society." A reference to the printed prospectus for the exhibition will show this to be an error on their part, as that rule, although applying to all the other departments, was especially rescinded as regards photographs. Mr. Briggs' collection were very fine, especially one of a lady trying with a lump of sugar to entice a bird from the top of its cage.

The number of competitors in the Amateur Section was limited to three, of whom Mr. Brownrigg, of Dublin, was awarded the second class silver medal for his Cat Hole Waterfall, Queen's County. This gentleman's pictures are all marked with great delicacy of judgment, and good manipulation. Mr. H. Cox, Cadgurth, Cornwall, also was awarded a second-class silver medal for some very nice studies; while to the case of cartes-de-visite of Mr. Tregaskis, of Redruth, a second bronze medal was given.

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ON ROTHIC ACID.

BY DR. T. L. PHIPSON, F.C.S.

(Abstract of a paper "On some new substances extracted from the Walnut," read at the British Association.)

When the thin membrane between the shell and the kernel of the walnut is digested with alcohol it yields to this liquid a new substance, nucitannin, which is soluble in alcohol and in water, but very slightly soluble in ether. It is a species of tannin, which, when submitted to the action of mineral acids for a few hours, yields, among other products, another substance of a reddish-brown colour, rothic acid, the composition of which is related to that of gallic acid. When an aqueous solution of nucitannin is boiled for some eight or nine hours with a little hydrochloric acid, the pale yellow liquid becomes more and more red, and finally of a fine reddish purple, like Burgundy wine. On cooling, the liquid deposits the new substance, rothic acid, together with some ellagic acid and gallic acid, which can be collected on a filter, whilst the filtrate is found to contain glucose and gallic acid.

Rothic acid is a reddish-brown solution, forming insoluble salts; with lime, lead and silver, soluble salts; with ammonia, potash and soda; very soluble in alcohol, and when dried at 118° C. represented by the formula $C^{28} H^{12} O^{14}$. Its lead salt is insoluble in acetic acid. Its silver salt is a fawn-coloured precipitate, which becomes darker on drying, but does not appear to be very sensitive to the action of light. Rothic acid only differs from gallic acid by a few equivalents of oxygen, as may be seen by comparing the two formulæ:—

$C_{28}H_{12}O_{14}$ = 1 equivalent of rothic acid.
$C_{28}H_{12}O_{20}$ = 2 equivalents of gallic acid.

The alcoholic solution of rothic acid is reddish-brown, and strikes a green colour with persalt of iron; when examined in the spectroscope it gives no absorption bands. It is a member of a somewhat numerous class of bodies to which belong gallic acid, ellagic acid, rufigallic acid, and some others. The composition of the substance called nucitannin, from which rothic acid is derived, has not yet been determined.

While occupied with the above investigation, I found that glucose can be detected in a liquid which contains gallic acid, and by means of the ordinary solution (nitrate of copper in excess of potash), the presence of gallic acid does not interfere with the test, for when treated alone a strong solution of gallic acid was found to have no reducing action upon the copper solution. Gallic acid may be put in evidence, in presence of glucose and hydrochloric acid, by means of a persalt of iron. A rather characteristic test for gallic acid is the following:—If the liquid contains much hydrochloric acid it is saturated with carbonate of soda, so as to leave only a small quantity of hydrochloric acid in the free state; the addition of a drop of perchloride of iron then produces a fine dark blue colour; if a little carbonate of soda is afterwards added, in the solid state, just sufficient to completely neutralize the remaining free acid, the liquid at once assumes a blood red colour.

PHOTOGRAPHIC OBSERVATION OF THE SOLAR ECLIPSE.

We have been favoured by Professor Morton with copies of his account of the observations of the late eclipse, made by the party under his charge in Iowa. The photographic operations appear to have been very successful, not less than one hundred and sixteen negatives having been taken. Professor Morton's letter from Mount Pleasant, Iowa, to the *Inquirer*, gives a very graphic account of the operations, and from it we shall condense some extracts. After describing the journey of the party, he says:—

Our own division consists of Messrs. E. L. Wilson, H. C. Clifford, James Creemer, and W. V. Ranger, and were joined the day after by Mr. John Carbutt, the well known photographer of Chicago.

Professor E. C. Pickering, with his apparatus for general "physical" observations, accompanied us. The rest of the party, with the Gettysburg telescope, then continued some fifty miles further to Ottumwa, where a station had been fixed for them. This last division consisted of Professor C. F. Himes, Mr. J. Zentmayer, Mr. E. Moelling, Mr. J. C. Browne, and Mr. W. J. Baker.

On Thursday morning we were joined by the party of Professor Wattson, of the University of Michigan, consisting of Professor Watson, Professor J. M. Van Vleck, of Middletown, Conn.; Professor Merriman, of the University of Michigan; Hon. J. D. McIntyre, and Mr. W. A. Johnson. These gentlemen were provided with telescopes and a spectroscope for astronomical observations. After consultation and an inspection of the premises, it was unanimously decided that the "fair grounds" just outside the town would be the location best adapted to our purposes. Application was therefore at once made through the Mayor of the city, Mr. A. C. Strawn, to the officers of the Agricultural Society, for permission to enter upon and occupy these premises, and this request was most kindly and promptly attended to. The remainder of this day was devoted to the construction of a photographic dark room in one of the buildings on the "fair ground," and in the removal of the larger instruments to this locality. Not a glimpse of the sun was seen during this day.

On Friday the prospect was equally discouraging, and the spirits of our party were metaphorically damped, as were their bodies literally, by the drizzling rain which fell throughout the day. There were some curious incidents which occurred in this connection. Standing in the wash room of my hotel, I heard two of my neighbours discussing the weather. One says: "Jim, do you think it will really clear up to-morrow?" To which Jim answered, "You be sure them fellers knows;" implying that we must be quite certain of a clear day, since we had come so far for the purpose of seeing the eclipse. An ancient inhabitant rather triumphed over us, saying that it served us right, for trying to peer into the works of Providence.

When, however, Saturday, notwithstanding an unfavourable wind, dawned clear as crystal, our worthy friend stood true to his colours, and told us this was only to show us what Providence *could* do, and that we would be fixed off before afternoon. Fortunately, Providence had kinder intentions, and, in answer to petitions that, on the part of some of us at least, were hearty and sincere, gave us such an opportunity to increase our knowledge of the laws by which the Creator rules His creation as could not have been improved.

All day long we were busy at our preparations and preliminary trials, and as the momentous moment approached, felt no small anxiety, though the beautiful working of chemicals and apparatus, in sun-pictures which we kept taking from time to time for practice, gave us confidence. At last Professor Watson announced that the first contact would come in six minutes, and each one went to his post. Messrs. Carbutt, Clifford, and Ranger shut themselves in the dark room to prepare and develop the plates. Mr. Creemer took the holders with prepared plates, from a window arranged in the dark room for the purpose, and handed them to Mr. Wilson, who placed them in the camera, while I kept the telescope on the sun by means of the finder, and managed the exposing slide and trigger. One minute of the contact came, and a plate was inserted; with one hand I worked the handles of the fine motion adjustment, and, with the other on the trigger, was ready to make the first exposure at the instant that Professor Watson, by raising his hand, should announce the first contact.

It was a curious illustration of human faith, as well as human foresight and ability, in the direction of accurate calculation. There shone the sun, amid a sky so clearly blue that it seemed the grossest absurdity to suppose any dark body could be within a thousand miles of its direction; and yet, there we were, all waiting for the instant when *we knew* a huge black ball would roll out of the azure space across this clear white disc. The moment came, at three hours, fifty-three minutes, eleven seconds. Professor Watson's hand went up; my finger went down; the trigger snapped; the exposing slide, with its one-fortieth inch opening flashed across, and we had a picture of the jolly sun, with the least possibly perceptible dent in the side of his face.

Picture after picture after this was exposed in pretty rapid succession, including four plates during the 2·52 of totality. One of these we lost by an accident; the others gave us strong impressions of the "solar flames," though, for want of clockwork, the definition is not good, it being impossible to give the telescope the proper motion by hand. The pictures obtained by the other instruments of our party at Ottumwa and Burlington will, however, supply all the information needed in this direction, and these, which are fully as good as I hoped for, will be of great value, as showing how much may be done with even a small instrument, on future occasions, if it has a clockwork movement, and will be of great use in showing the effect of short exposures during totality.

I had little chance, as may be imagined, between the working of tangent screws and making exposures, to see the total eclipse. I got a glance or two over my shoulder, and was rather disappointed. The corona was seemingly of a red colour, and only formed a narrow fringe of rays about the moon—no far-reaching brushes of light, such as are shown in many drawings taken on previous occasions. As regards the moral, or rather mental, impression, it seemed to me like a great experiment, in which I was concerned, and had hard work to keep up to time. This was, however, from my peculiar position, which prevented me from giving my attention fully to anything but my work.

After the totality, we continued to expose plates as before, until the end of the eclipse, and made in all about forty good negatives.

From the division of our party at Ottumwa I hear that thirty-four good negatives were taken, including four during the total phase; and from Burlington, that forty-two were obtained, including six during totality. We have thus, as the work of the Philadelphia party, an aggregate of one hundred and sixteen good negatives, including ten of the total phase, with three inferior but valuable ones of the same period.

MR. ROBINSON AND HIS METHOD OF WORKING.

Our excellent contemporary, the *Philadelphia Photographer*, is in the habit, as our readers know, of publishing with each monthly number an example of the work of some distinguished photographer. With the last number a print by Mr. Robinson was issued, and an article on the artist and his mode of working was given in the same number. As it contains much that may interest our readers, we append some condensed extracts, in which the writer presents Mr Robinson "as a special representative of a distinct phase of photography."

"Mr. Robinson," he observes, "stands almost alone, especially in the old world, as being at once the champion and the practical exponent of the art-claims of photography. Of course, there are few, who are familiar with the art and its capabilities, who do not assert the claims of photography to a position in the sacred sisterhood of the art; but Mr. Robinson's vindications of the pictorial power of the art have chiefly taken a practical form; he has produced pictures: not simply landscapes, not simply portraits, not simply figures or groups pictorially treated, but, aiming to meet the painter on his own ground, he has selected and combined the materials presented by nature, so as to exercise something of the creative power in producing a pictorial composition which should tell its story without need for explanations.

"After commencing life as an art student and painter, and many years ago exhibiting at the Royal Academy, Mr. Robinson became fascinated with photography, and a dozen years ago devoted himself to its professional practice. He has steadily, during that time, in the midst of very successful and exacting practice as a portraitist, undertaken to produce at least one composition every year, which he could put forward as a vindication of the art capacity of photography. His position has been, that what are termed the fine arts, such as painting, sculpture, &c., are but the vehicles through which the creative power of the artist finds expression, and that all these vehicles or media are, in their degree, plastic to such an end. In this sense he claims for photography a position as a medium for art expression as undoubted as that of painting—more limited in range, most undoubtedly, and less plastic in character, but precious for its truth and the minute beauty of its detail.

"This idea of producing, at least once in each year, some picture for the credit of art, giving it the devotion of months of thought and much labour, without any view to publication or profit, is one worth attention, and one which, extensively put into practice, could not fail to advance the art. The full development of the pictorial powers of an art like photography must always be the work of enthusiasts. Much must be done without hope of immediate profit, if of profit at all. Let us take an example in one of Mr. Robinson's pictures, 'Bringing Home the May,' produced in 1862. It is a large oblong picture, forty inches long by sixteen inches deep, and was printed from nine negatives. It represents a scene common to English rustic life, when in the early spring morning a troop of happy girls have gone to the woods to gather the fragrant wealth of hawthorne blossoms for the May-day festival. It may be worth mentioning, in passing, that Mr. Robinson carefully eschews the attempt to produce imaginative pictures or historical subjects by photography; he does not attempt to illustrate 'Footsteps of Angels,' 'Joan of Arc,' or other similar subjects, which must be entirely dependent on the imaginative or creative power of the artist, and of which any dressed-up model must be but an imperfect presentment. Any combination which is possible in this day, and which, as having an actual existence, might possibly be brought before the camera, he regards as legitimate subject for the photographic art; and however far apart the elements of the combination may be, he is willing to gather the parts separately wherever he can find them, and then join them in printing, so that they shall do no violence to nature and truth, and yet be satisfactory as pictorial art.

"The mode of going about the production of a composition of this kind is very systematic. The conception once formed, a complete sketch of the subject is drawn, the composition of lines and the balance of light and shade being carefully studied. The general effect of the picture being decided, the next question is, how many negatives will be necessary to produce, and how the subject may be most suitably divided, or what parts can be secured in one negative without sacrifice. Then, the landscape scenes which form the background, whether wood or water, mountain or plain, have to be sought and photographed at the proper season of the year, in the proper hour of the day, and from a point to secure the right lighting. The figures and other accessories have then to be secured in the open air or studio, in sunlight or shadow, but all in due harmonious keeping. Each negative of the series must be secured with printing powers suited, by its force or delicacy, to its place in the picture. Then the mechanical details of perfect or unseen junction, or relative force, &c., require attention. The printing of 'Bringing Home the May' required nearly eight days. The cost of producing each individual print, it is probable, would be too great to admit of the publication or general circulation of the picture, and it is only with a view to illustrating the capacity of the art, and as a general exercise and development of art-powers, that photographers could be expected to engage on such works; but there can be no question that such efforts tend to raise the art, both in fact and in public estimation."

A long description of this picture, extracted from a criticism in the News, follows, which it is not necessary to repeat here. The writer proceeds:—

"As a portraitist Mr. Robinson takes high rank, and has attained a rare degree of commercial success. His operations are simple and certain, everything like complexity being carefully eschewed. He has great faith in the artistic photographer's command over pictorial effect in the operation of developing and managing by the local application of the solution materially to modify the light and shade in the picture."

An extract from Mr. Robinson's article on development in our last Year-Book follows, and the article concludes with some remarks on the pictures at the recent American exhibition.

"Those who were privileged to see the productions of Mr. Robinson at the late exhibition will not soon forget them. They were so widely different from anything we are accustomed to seeing here that they attracted the greatest attention, and most deservedly so."

Correspondence.

THE ALKALINE GELATINE PROCESS, AND BROMO-IODIZED COLLODION PROCESS.

Sir,—I see that Mr. Sutton has brought out another of his periodical novelties which are to revolutionize photography. Whether the alkaline method proposed will be on a par with many of his former projects, or whether it will add something practically useful to the art, can only be settled by experience. Whatever may be the result, no harm can come from intelligent experiment and discussion in neglected directions, and, by promoting such experiment and directing attention to something beyond the ordinary groove in which photographers are apt to stick, I think that Mr. Sutton does service to the art.

But no man does such good service as he ought to do by being careless or uncandid in relation to his indebtedness to others. Referring to Mr. Bartholomew's alkaline gelatine process, which is in so many respects identical with that just proposed, Mr. Sutton says:—"I never heard of Mr Bartholomew's process before to the best of my recollection." Now I shall show that he is either strangely uncandid, or that his recollection is so bad as to deprive his word of all authority. In his own pages—*Photographic Notes*, Feb. 1st, 1862—he published Mr. Bartholomew's process with gelatine and carbonate of soda, extracting it from the Photographic News of a few weeks previous. But this was not all. In a leader in the same number of the *Notes* he commented on Mr. Bartholomew's process. In an article on his pet project of that day—a rapid dry process—in which he stated his conviction that the principle upon which rapidity in dry plates was based was the retention by the film of a little free nitrate of silver, he said:—"Our experiments *do not permit us to believe in the possibility* of employing any other principle in the production of a rapid dry plate, and *we cannot endorse the opinion expressed by Mr. Bartholomew in a communication which we have copied from the* News *into the present number, or encourage our readers in the hope that they will obtain any good result in that way.*" The italics are mine. That his opinion should change or advance, and that he should now advocate something which the News published seven years ago, and in which he did not believe then as even possible, is not matter for much comment; but it is too bad that, after publishing it and commenting on it himself, he should, in introducing it as a novelty, declare that he never heard of it before "to the best of his recollection."

There is another point in which Mr. Sutton's memory appears equally at fault. He has asserted more than once lately that he first suggested the wet collodion method now in use—that is, the use of bromo-iodized collodion, bath with nitric acid, and iron development. Anything more preposterously untrue could scarcely be imagined; and it is a little too bad, and very unfair to such as yourself, Mr. Editor, who fought the battle of bromo iodized collodion steadfastly against considerable odds, that one of the most persistent opponents of the present method of working should, now, when the excellence of the process is universally recognized, coolly claim the credit of introducing it. Mr Sutton's claim is based, I suppose, upon an article in his *Notes* in December, 1858, in which he admitted that a bromide when added to collodion was an accelerator under certain circumstances. He there describes a process, very like the ordinary positive process, for producing rapid collodion positives with bromo-iodized collodion and iron development, and he adds, "the attempt to intensify a thin metallic film of this kind [the kind produced by the method described] with a mixture of developer and nitrate of silver altogether fails." It will be clear to any one that such a description did not tend to popularize a process, if even it were new, and it is pretty clear also that such remarks have no relevancy to the process in use; but it is also true as old photographers know, that there was nothing very new in the mode described at the time, and that it did not initiate anything new in practice. Bromo-iodized collodion, bath with nitric acid, and iron development had been recommended years before often enough. Just fourteen months before, a capital formula for bromo iodized collodion with iron development was published in the Society's Journal, which I used successfully, both for positives and negatives, for more than twelve months before Mr. Sutton's publication.

But apart from this, Mr. Sutton continued for years after practical men had abandoned it to advocate the use of simply iodized collodion with pyro development. Not many years ago he devoted some articles chiefly to the condemnation of bromide in collodion as being a retarder, a "drag on iodide," and at best a "partial remedy for bad chemicals," and he then recommended portraitists to "go back to the old pyrogallic developer with simply iodized collodion," and "give up the use of bromide and iron developer." I have no doubt that this was done honestly enough, and it is not worth while now to discuss its wisdom; but for a writer who very staunchly advocated this course for years to begin to fancy that he originated the very method he spent so much energy in condemning is too much of a good thing, even if it be the result of a lively imagination and a bad memory.

As I have given references and authorities for my statements, it is not necessary to substantiate them further by adding my name, and as I have seen the vindictiveness with which some men have been personally attacked who have ventured to think less of Mr. Sutton and some of his friends than they think of themselves, and as I am not anxious to incur the annoyance of such attacks, I simply sign myself, yours, A Very Old Photographer.

KEEPING TANNIN PLATES AFTER EXPOSURE.

Dear Sir,—The great drawback to the tannin and tannin and malt processes has hitherto been that the plates would not keep well after exposure, and consequently were not suited to travellers, as it was beyond a joke to have to develop half a dozen pictures in your bedroom after a hard day's work, with the chance of having to pay for damage done to the furniture by nit. silver stains.

I am now in a position to speak positively as regards my success in obviating this difficulty. It occurred to me, some twelve months since, that in all probability plates partially developed with pyro and bicarb. soda only would, after washing and drying, be capable of intensifying at a future time. I named this to a friend, who promised to try the experiment; but, although an excellent photographer, his report was unsatisfactory. I therefore let the matter drop, but about a month since determined on trying my hand, when, much to my delight, I found no difficulty whatever. I have intensified ten, twelve, and fourteen days, after using the alkaline development only, with the most perfect success, and I see no reason why plates kept from the light for months may not turn out satisfactorily. The chemicals to be used *en route* are simply dry pyro and carb. soda. You have only to flood the plate with water, and then with about as much pyro as will lay on a silver penny, and about half that quantity of carb. soda dissolved in one ounce water. This is amply sufficient for a plate eight by five. When the image appears, wash, dry, and place in plate-box. Half-a-dozen pictures may be easily developed in a quarter of an hour, and no nitrate of silver nor other staining abomination necessary.

It appears strange that this method should not have been previously tried; or, if tried, published. I feel sure that I shall receive the thanks of very many photographers for making it known as a means of simplifying the most simple of all simple processes.—I am, dear sir, yours truly,

Cheltenham. 31*st August*, 1869. Baynham Jones.

THE PHOTOGRAPHIC COMPETITION AT WESTWARD HO!

Dear Sir,—I send you the award of the judges in the matter of the photographic competition for the prize offered by the Directors of the Westward Ho! Hotel. Mr. Archibald Coke, of Newton Abbey, was named the winner; the others commended. As it is just now the height of our season, when every professional photographer is or ought to be busy, the small number of competitors (only three) is not to be wondered at.

Should there be yet any brother of the camera meditating as to what direction his tour shall be, I can, from experience, say that for coast scenery the beautiful county of

Devon can hardly be equalled, and not surpassed. The improved means of land transit and the daily aquatic excursions by steamer give the artistic and photographic tourist the most favourable opportunities of exploring all the most interesting localities in the most comfortable manner and the greatest safety. Allow me also to say that I shall be at all times pleased to give any information or advice as to route to any who may be strangers to this part of the world. James Martin.

114, *High Street, Ilfracombe, Devon.*

A NEW DEVELOPER FOR HOT CLIMATES.

Sir.—I send you herewith a new developer, which I have used for more than a year, and for about six months exclusively. It can be modified in many ways, but I send you the formula I consider best, and which I have used during the past six months, and, during a month, travelling under all possible circumstances. The formula below is what I use in a temperature of 90° to 112° Fah., and the modification required for a cold climate will have to be ascertained by those who wish to use it.

No. 1.—Make the following stock solution:—Put a wineglassful of zinc pieces into a bottle of about 15-ounces capacity; pour 6 ounces of water into it, and then add 1½ ounces sulphuric acid. After some hours the solution probably looks milky, as more zinc is dissolved than the water will hold in solution. Add 5 ounces more water, and let it stand (loosely covered) at least three days. Shake occasionally. Let the zinc be in excess. The acid should be exhausted as much as possible, which takes about three or more days. Take the above zinc solution, immerse a "silver meter," and add water until the solution shows about 90°.

No. 2.—Make a solution of sulphate of iron in water, and (for the sake of illustration) take 15 ounces water, and add to each ounce 15 grains iron. Shake till dissolved.

No. 3.—Put half an ounce of the zinc solution (showing about 90° with the siver meter) into a measure holding about two ounces. Add to it drop after drop, strong liquid ammonia. Keep stirring with a glass rod, adding ammonia until all the zinc is thrown down, or rather converted into a stiff opal white jelly; but do not add too much ammonia, as it dissolves the zinc again, and forms a clear solution. Add to this jelly about one ounce of water, and drop in dilute nitric acid, drop by drop, until all the zinc is dissolved again. This point being reached, add it to the iron solution, and the developer is finished. Add alcohol as required by the bath to make it flow well; but the less added the better; therefore let there be no more than is actually wanted.

The result can of course be obtained in different ways, but the above mode is the one I use, as nothing else is wanted than what is in every studio.

Precautions.—Do not add more ammonia than is required to throw all the zinc down; if too much is added, the developer will not keep well, and will have a tendency to turn mouldy on the plate. Do not add too much nitric acid; add no more than is required to dissolve all the zinc, or your deposit on the plate will be very metallic, and the exposure will be longer. If all is right, the developer will keep for weeks of an apple green colour. I have seen no change in a sample kept for two months in the hottest weather for trial. But if there is a mistake made, or the alcohol used be impure, a rusty-looking deposit will be thrown down in a few days, which is not desirable.

Development is rather quick, fog cannot be produced, and no intensifying whatever is needed, if all is in good condition. Silver can, however, be added to it for intensifying either the whole plate or isolated portions. Stains, smears, fog, and other irregularities do not stick to this developer; and its greatest merit is, in my opinion, that it gives light and shade, just as you see it in the original, to greater perfection and much easier than with any other developer.

Each worker must modify it to suit the condition under which he is working. It is no remedy for bad bath, bad light, bad collodion, nor dirty plates.

Let it be put to trial, and the results reported. I have freely received, and give this freely. More in my next.—I remain, sir, yours obediently,

Eastern Correspondent.

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Talk in the Studio.

Photographs of Persons "Wanted."—The *Athenæum* says, a curious illustration of the uses to which advertising may be put occurs in a morning journal, which announces a reward to be paid to "photographers and others" for the carte-de-visite of a certain person, who, it would seem, is "wanted."

Indecent Books and Photographs.—The prisoners recently charged with vending indecent books and photographs in Holywell Street, as recorded in our last, were again charged on remand on Tuesday, and committed for trial.

Photographs of Boats' Crews.—We have been favoured by Sir Aubrey Paul, Bart., with some portrait groups of the crews of the Oxford and Harvard boats, engaged in the recent race. The grouping is easy, simple, and natural, and the photography very good. They form pleasing and interesting groups, better than the average of such pictures, which are often taken under difficulties, and show this in result.

Swindling a Photographer.—The solicitor for the assignees of a bankrupt at Newcastle-on-Tyne, after describing his extravagance in ordering a recklessly expensive wedding and wedding breakfast for his daughter a week before filing his petition, described the crowning piece of fraud as consisting in cheating a photographer. He said:—"A piece of more deliberate and downright swindling never was perpetrated than that which the bankrupt had been guilty of. On the 3rd June this breakfast was consumed, and on the 10th the bankrupt filed his petition in this court. The bankrupt, however, not content, must have another victim. While the guests were all assembled, the aid of the photographer was called in, and for the photograph of the wedding group a bill of £3 was filed. He was only sorry that he had not one of the photographs, so that he might have put it in."

Influence of the Intensity of Coloured Light on the Quantity of Gas Set Free by Plants.—M. Prillcux says, in *Cosmos*, it is well known that, under the influence of direct sunlight, the green-coloured parts of plants decompose carbonic acid. In order to learn the effect of rays of light of equal intensity, the author has applied coloured solutions which could be rendered more or less deep-coloured by adding thereto dye-stuffs, while the intensity of the light was photometrically measured. In the midst of these coloured aqueous solutions, branches of aquatic plants were placed in large glasses filled with water saturated with carbonic acid. The undermentioned figures denote the activity of decomposition of carbonic acid for two kinds of aquatic plants thus exposed during one minute of time. No. 1 refers to the *Potamogeton perfoliatus*, Nos. 2 and 3 to *Eleodea canadensis*.

White light	64·75	74·5	51·36
Blue light	56·00	58·8	52·92
Orange light	55·30	57·0	38·00

There may, therefore, be deduced from these experiments that the differently coloured lights do also act differently upon the green parts of plants, and call forth an equal disengagement of oxygen, when the intensity of the light remains the same, and, consequently, all the rays of the solar spectrum cause the decomposition of carbonic acid by plants.—*Chemical News.*

Researches on the Illumination of Liquids by Means of a Beam of Neutral or Polarized Light.—M. Lallemand, in *Les Mondes*, describes minutely in this paper a series of minute optical experiments with liquids suitably held in tubes.

When a beam of sunlight is made to illuminate different liquids, there are observed various phenomena dependent upon the substance employed, or under observation. In this aspect liquids are divided into three categories—(1) some do not possess any perceptible fluorescence, and are devoid of rotatory power; (2) they possess more or less fluorescence, and, akin to the first, are devoid of all rotatory power; (3) these fluids have rotatory power, and exhibit, in addition thereto, often a very strong fluorescence. To the first class belong, among other liquids, water, nitric and hydrochloric acids, and liquid ammonia. Samples of the second class—solutions in pure water of salts of quinine, also esculine, and, among pure liquids, perfectly chemically pure sulphide of carbon. Third class—a concentrated solution of pure cane-sugar may serve as examples.—*Chemical News.*

Substitute for Copper in the Daniel's Battery.—Few persons, says an American paper (*Telegraph*), in experimenting upon voltaic combinations, ever consider economy in their construction, and experiments which tend to cheapen their first cost should be made public. An expensive part of the Daniel's battery is the copper plate, the cost of which can be reduced two-thirds in the following manner:—Procure sheets of the ordinary sheet tin of commerce, brighten and plunge into a very weak copper plating solution in connection with a voltaic battery of very low quantity. In fifteen to eighteen hours a tenacious film of copper will have been deposited upon the tin, and the plate can then be bent in shape suitable for a Daniel's battery.

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To Correspondents.

Novus.—The sole purpose of washing residues is to free them from soluble matter, and it is necessary, therefore, to allow water to pass through the mass. Where a large quantity is to be washed, it is well to place it on a strong filter in a funnel, and place under a stream from a tap for a while. Sometimes it is desirable to support the filter by a cloth, to prevent it bursting and wasting part of the residue. 2. Autumnal light is generally much less actinic than the light of early summer and spring. The difference in your exposures may be due to that. We do not know of any plan whereby you can decrease the exposures except by using a stronger developer. 3. Mr. Robinson's book will be ready in a few days. 4. We are uncertain; it would require consideration. 5. In working with washed wet films, the use of a ripe collodion appears to be necessary. With a new collodion fog is sometimes found to ensue.

J. C. S.—The formula for albumen dry plates would occupy too much space for repetition in this column. You will find it given on p. 265 of our Fifth Volume, the number for June 7th, 1861. But of course there are various other modes of producing transparencies, some of which are easier than the albumen process, although, perhaps, no method of silver printing gives equally rich black tones.

J. T., Jun.—The card group you enclose has many good qualities. The lady having moved a little is the chief fault. We should prefer it printed and toned a little warmer.

Photo-Velocipedestrian.—Our correspondent must excuse the excision of a quarter of a hundred letters from his *nom de plume*; it is now sufficiently distinctive. The description of the diameter of the lenses of any combination is of but little service in enabling us to say what work it is fit for, or how it is likely to do the work. The probability is that the second lens described is a half-plate lens, but we cannot say with certainty. The best indication of the size of plate for which a lens is intended is the focus of the lens. We may say, in rough terms, that a portrait lens will generally cover a plate whose longest diameter is equal to about three-quarters of the focal length of the lens. Thus, a quarter-plate lens of six inches focus will cover a plate four and a-quarter by three and a-quarter inches. 2. If your chemicals are in order, and the exposure be long enough, the image will certainly come out on applying the developer. Possibly the plate fogs, and then the image, instead of coming out, will appear buried in a general mist. This may be due to a bath not in good order, or to too little acid in the developer, or to diffused light reaching the plate, or to the use of newly-mixed collodion, or other causes. 3. Cyanide of potassium is always a dangerous fixing agent, and will readily dissolve the image if it remain long on the film. It is better to use hyposulphite of soda; but if you persist in using cyanide, try it a little weaker, and be careful to wash the plate as soon as possible after fixation. If the plate be only imperfectly developed, the cyanide will the more readily dissolve the image.

S. J. B.—The chief fault in the portraits forwarded is in the lighting. You have too much front light, and this, with a delicate, soft-featured face, with very light eyes, gives the flat effect of which you complain. All the pictures are very fully exposed: with such a lighting as you are employing a little shorter exposure might be an advantage. If you describe exactly the character of your studio, the amount of glass, size of panes, and general proportions, we may possibly be able to help you regarding the question of exposure.

Arte et Labore.—Imperfection in the albuminized paper is the most likely cause for the defect in the print forwarded. Sometimes weakness in the silver bath, or the floating of several sheets, without shaking up of the solution to preserve the equality of density throughout the whole quantity in the dish, will cause such spots. If many sheets of paper are floated on a solution in succession without disturbing it, the upper layer, having the silver abstracted, becomes weaker than the lower layers of water, and a general agitation is necessary to restore the balance. This may possibly account for the spots, but we fear it is in the paper. We have known similar spots arise from paper having become damp or spotted with wet.

Letter-Press.—There is no need for any kind of registration to enable you to conduct the business of a printer. It is necessary, as a rule, that your imprint—that is, a statement of your name and address—should be on every document that you print.

A Collodion Maker.—The formula to which you refer, as appearing in our issue for July 10th, is that, we presume, of Professor Towler. The fact that it is too thick is due to the unsuitable quality of the pyroxyline you have employed. With a good sample of photographic pyroxyline, six grains per ounce would not give a collodion too thick or gelatinous; but with some samples of pyroxyline that result might happen. As a rule, the pyroxyline made for preparing pyroxyline for use in surgery is not suited for photography. It is probable, from your account, that three grains of the pyroxyline to each ounce of solvent would have been sufficient. Try diluting it considerably, using a little more ether than alcohol.

Eastern Correspondent.—Thanks. Your requests shall receive attention. More in our next.

B. L. D.—A sample of collodion iodized with a cadmium salt requires much longer time to ripen than one containing alkaline salts. Probably twelve months at least should elapse before collodion containing iodide and bromide of cadmium only should be used. If required for use within a few days of mixing, half the iodide should be an ammonium salt instead of all cadmium. It is better stored for ripening in a dark, cool place.

F. T. L.—We do not approve of india-rubber for mounting, as we have repeatedly stated. We have various examples now in our possession, in which india-rubber mounted prints, sent out by publishers in good condition, have curled off the mounts within a few months, sometimes within a few weeks. To avoid cockling, glue answers well. Starch or other kinds of paste generally cause cockling when used on thin board or plate paper. The cause is obvious. The moisture penetrating the print causes it to expand, and it is placed in contact with the mounting board in this expanded state. In drying, the print contracts, and, in contracting, it necessarily attempts to pull the mounting board with it, and hence the cockling. As glue is in a fluid state in virtue of heat as much as because of the water it contains, the print is less penetrated with moisture, and therefore expands and contracts less, and produces less cockling.

An Old Subscriber.—With the sitter facing east you can have your principal side-light from the north, which is just the thing required.

Erratum.—In noting some fine enlargements in collodion transferred to paper at the *soirée* of the British Association at Exeter, they were inadvertently attributed to Mr. Abney, instead of to Mr. Bradnee, of Newton Abbott and Torquay.

Several Correspondents in our next.

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Photographs Registered.

Mr. D. **Grego**, Dundee,
Three Photographs of Remains of late Rev. P. Grant.

Mr. E P. **Lee**, Cardiff,
Photograph of Rev. David Howell.
Photograph of Mr. Hamilton Hume.

Mr. J. **Davis**, Waymouth,
Two Photographs of Ancient Carving of the Crucifixion.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 575.—September 10, 1869.

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SUBSTITUTE FOR YELLOW GLASS.

In Professor Morren's paper on the peculiar action of light, to which Professor Tyndall called the attention of the Royal Society last year, mention is made of the property of bisulphate of quinine in arresting the chemical rays, whilst permitting illuminating rays to pass freely. This action of such a solution is not announced as a new discovery, the peculiar property having been known as a scientific fact for some years. Singularly enough, little or no attempt has hitherto been made to utilize it, if we except the various disappointing experiments, made some time ago, with a sheet of paper treated with the solution, which some one was sufficiently foolish to allege would arrest the chemical rays. Professor Morren states that a screen of this solution five millimetres in thickness, although quite transparent so far as illumination is concerned, will completely arrest chemical rays, and was found quite efficient in the extremely delicate experiments in which he was engaged.

The practical application would be simple, and Professor Morren commends the matter to the attention of photographers as giving facilities for increased light without chemical action in "dark rooms." A layer of the solution may easily be confined between two plates of glass by means of gutta-percha, marine glue, or any suitable cement. The thickness required, five millimetres, equal to about three-sixteenths of an inch, does not involve any necessity for a clumsy arrangement, but might be fitted into a sash as easily as a single pane of glass. A small amount of window space with adiactinic panes of this kind would admit of a large amount of light, without risk to the sensitive surface. We commend the experiment to our readers.

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FOREIGN MISCELLANEA.

The old Berlin Photographic Society, from which a branch has recently separated, carrying with it the organ of the Society, the *Mittheilungen*, has started a journal of its own, under the name of *Licht*. Of this publication Dr. Stolze is, we believe, the editor.

The *Photographische Correspondenz* presented its readers with a specimen print of M. Albert's new mechanical printing process with the August number of the journal.

The Sarony crayon style of portraiture has been favourably received in many places on the Continent.

M. Morren has communicated to the *Academie des Sciences* the results of an investigation upon the effect produced on certain gaseous bodies by sunlight. The experiments detailed are somewhat analogous to those undertaken by Professor Tyndall.

M. Leiber, for some time editor of the *Moniteur de la Photographie*, and the compiler of the *Encyclopédie Photographique*, has just died at Paris. He was thoroughly versed in photographic literature; and photographers, both professional and amateur, will keenly appreciate the loss that the art sustains by his death.

The permanent photographic exhibition has been formally opened by the Berlin Photographic Society. The exhibition is contained in two spacious rooms, the exhibits including not only photographic productions, but also apparatus, chemicals, and other requirements necessary to the prosecution of the art. The firms who send specimens of their pictures are many of them of well known reputation; as, for instance, E. Linde and Co., Adele, Fritz Luckardt, Eulenberg, Carl Suck, A. Caccia, A. Braun, W. England, Warren de la Rue, &c. Some fine landscapes and panoramas are shown.

M. Leon Vidal, the learned secretary of the Marseilles Photographic Society, has devised a photometer for carbon printing, the details of which are given in the *Moniteur*.

In regard to the preservation of Daguerreotypes, it may not be out of place to quote from the *Moniteur Parisien* for 1839 a method both simple and efficient, which may be applied for preserving any pictures upon metal plates. The use of a varnish for the purpose is deprecated, and M. Dumas recommends instead the employment of a hot solution of one part of dextrine in five parts of water. The surface of the picture should, in the first instance, be quite clean.

At Vichy, in Central France, a favourite watering-place of the Emperor, who has thus rendered a flat, uninteresting district one of the most attractive and popular spots of the Empire, a palatial photographic establishment has recently been erected by M. Coutein. The Spa is, during the summer, the resort of some of the highest nobility of France, and likewise of the most talented artists who are engaged there during the season, and M. Coutein therefore enjoys many brilliant opportunities of distinguishing himself. The establishment has three studios: one on the ground floor, for the convenience of invalids and others who find locomotion difficult; one in a beautiful garden, so arranged as to have a most charming background, for the special purpose of taking groups; and a third on the first floor, fitted with blue glass with a ground surface, and which is particularly suited for taking lady portraits. Withdrawing saloons, billiard rooms, &c., are provided for the convenience of visitors who may be obliged to pass some time in waiting their turn.

Several of the Parisian photographers advertise the presentation of a large quarto portrait to any customers purchasing a dozen cartes-de-visite.

M. Balard, president of the French Photographic Society, has communicated, in the name of M. Lallemand, a paper to the *Academie*, entitled "Researches on the Illumination of Liquids by Neutral and Polarized Light."

VISITS TO NOTEWORTHY STUDIOS.

The Studio of Mr. Kurtz, in New York.

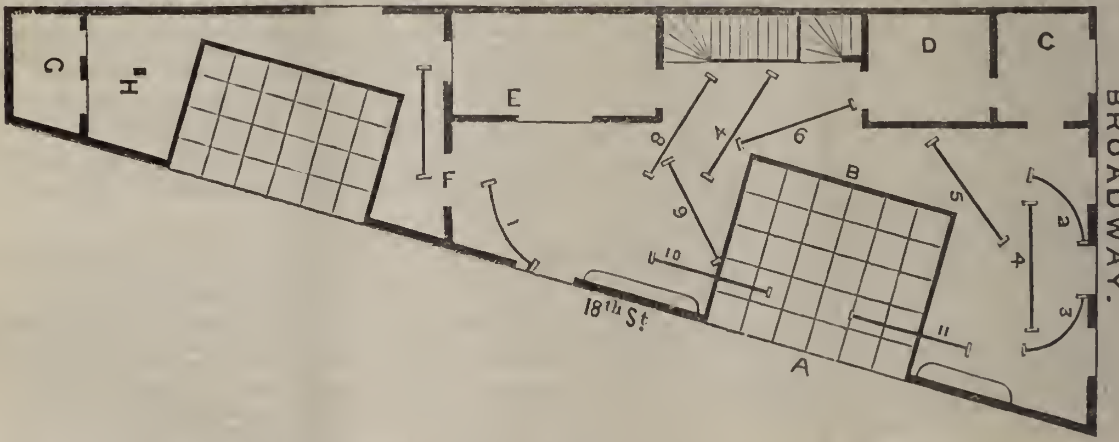
Carrying out our project of bringing under the attention of our readers the details of the noteworthy studios which we visit personally, or which are visited by our friends, we here present our readers with an account of the studio of Mr. Kurtz, of New York, by our friend and confrère, Mr. E. L. Wilson, of Philadelphia, who has obliged us with an early slip of the article intended for his own journal. We may remark here that the work of Mr. Kurtz is amongst the very best we are in the habit of seeing. It is essentially distinguished by artistic feeling in pose, arrangement, and lighting. So far as we have had opportunity of judging, it is in the skilful management of light that Mr. Kurtz especially excels, producing great variety of very effective results, always securing delicacy, force, and modelling, and often a striking departure from the commonplace arrangement of light, and the ordinary grooves, in which photographers are too apt to stick.

Mr. Wilson describes Mr. Kurtz as an artist by education and profession; "and," he adds, "not only is Mr. Kurtz an accomplished artist, making work and getting effects that all would do well to emulate, but he has no secrets. He is willing to communicate all he knows to others; and, although he knows much, he is ever willing to receive instruction from others. He is, therefore, according to our ideas, as near being a model photographer as any one we can refer to, and we are glad to know that success attends him: he deserves it. We have at hand about two dozen portraits made by Mr. Kurtz. What is singular, no two are treated exactly alike. There is method and invention in each one, yet they strangely vary, showing that in his new studio he can get any effect he likes, or any effect of lighting desired."

We will now proceed to describe his studio.

Mr. Wilson points out that here, as is so often the case, the best had to be made of existing circumstances. He says:—"Our readers will bear in mind that Mr. Kurtz first leased his building, and then made the best he could of the space he had. Instead of giving a profile or interior view of his studio, &c., therefore, we think the matter will be better understood by a plain drawing as below. The location is at the South-East Corner of Broadway and Eighteenth Street. There is a fine wide entrance on Broadway, decorated with elegant specimens, and a stairway leading to the second floor. In the second story are the reception and dressing rooms, office, studios for artists, stock room, &c., all convenient and admirably arranged. The third floor is devoted to the studios, and, with the annexed drawing, we give Mr. Kurtz's arrangement thereof, and his method of working.

"By referring to the plan, it will be seen he has a front view on Broadway of about fifty feet, with four windows, by eighty feet on Eighteenth Street. The main light, A, is fourteen feet long (situated between two chimneys, consequently he had no alternative as to the length) and fourteen feet wide, with an angle of 30°; the side light being fourteen by ten feet, glazed with double thick Belgian white glass. The side light contains eight light iron frames covered with white muslin, running up from the floor, capable of being all opened together or separately, in either direction, thus performing the double duty of screen and reflector. The top light is furnished with two screens on rollers, with springs, the screens running in the direction A to B; the room C is the chemical department or laboratory, wherein, of course, are compounded all the preparatious used; immediately adjoining is the developing or dark room, D; opposite, at the head of the stairs, is the ladies' dressing room, E; through the door F we pass into the children's skylight, which is about forty feet long by twenty feet wide in the widest part; at the smaller end is the dark room, G. The size and shape of this room Mr. Kurtz was compelled to make exactly as it is, as it is built on the roof of the adjoining portion of the building. The light is fourteen by ten feet, cloth top and side, and it works exceedingly quick, two to three seconds' exposure on fine days, to six seconds on cloudy days. In here are the pictorial backgrounds, rocks, shrubberies, and solid accessories of the rural kind. The camera, being placed at H, generally remains on one spot. In the main light the screens are placed as seen by the numbers 1 to 11. The side light effects are produced by screens 1, 2, 3, which are peculiarly arranged by open windows, and are constructed to relieve the dark parts of the sitter on a light background, and the lighter parts of the sitter on a darker background.



"Pictures are taken all over the room, and rarely are taken from the same spot twice, all, of course, depending upon the light, kind of subject, and the side to be taken. The screens marked 10 and 11 are those used for the 'Rembrandts,' whereby it will be seen the sitter is placed back to the light, and by the reflector, presently to be described, the shadows are brought out.

"The reflector is a screen on rollers, with two doors or wings, capable of opening and shutting entirely round from either side, both sides being used. At the bottom of each door is an adjusting-bolt, to retain the door in any desired position. One side of this reflector is covered with tin-foil, being more powerful than the other side, which is perfectly white.

"The developing-room is lighted with orange glass, and the light has first to go through the chemical room.

"Although this studio is of peculiar construction, its main features and advantages may be easily adopted by others. Mr. Kurtz has certainly made everything, possible, available in his rooms. At background 1 many of his most pleasing effects are secured. There is no direct top-light there, but the light secured from the main top-light with the small window at the (north) side enables him to get brilliant effects of a most pleasing nature. A chapter could be written upon the backgrounds, &c., used by Mr. Kurtz, but, as he promises us a chapter on that subject himself, at some future day, we will not discuss them now. There is one 'dodge,' however, that we will explain. In the studio we saw a small platform on wheels, with handles like a barrow, and a chair thereon. We naturally enquired what it was for? Mr. Kurtz answered: 'When in the dark-room preparing plates, I often see my subjects assume very graceful positions, which it seems almost impossible to get myself when I go to pose them. Therefore, when they come in, I seat them on this platform, and watch them from the dark-room. When they assume a pose I like, I step out, ask them to keep it, and I wheel them under the light where I want them.' This is a capital plan, and works admirably."

MASKS AND FACES.

BY PROTAGORAS.

Part X.—I Attempt to Refute "Brown."

"Well, friend 'Brown,' it is my turn now. You had an awfully heavy go-in on the last occasion; you made so many charges that I hardly know where to begin my reply."

Brown.—"I am not a bit surprised; I knew I gave you a pill. If you attempt to answer me, you have your work laid out. However, go a-head; I'll listen."

Protagoras.—"I'll plunge right into the subject."

Brown.—"Take care you don't get out of your depth."

Protagoras.—"Don't be a fool, 'Brown,' if you can help it. It seems to me that the gravest charge you had to make against photography—or, rather, against photographers—was, that they were venal and sordid—that they practised the art for what they could get out of it. Now, before going into the argument, I strongly object to the unnecessarily offensive form in which you put it. Granted that the bulk of persons who follow photography do so to earn their livelihood by its practice, is there anything venal or sordid in that? Is it not a worthy and honest method of obtaining daily bread? You are always throwing the artists in our teeth; but do they practise what skill they possess for the pure love of painting pictures? Does Millais give his pictures away? Does Frith paint his 'Ramsgate Sands' and his 'Railway Stations' for nothing? Does Landseer make no £ s. d. reservation before parting with his representations of animals?"

Brown.—"You must not compare photographers with these great men! Don't be ridiculous."

Protagoras.—"Well, take a lower walk in art. Are not engravers and lithographers paid for their labour? and are they venal and sordid in taking money for money's worth? Are men to make steam-engines and lay telegraphs for the pure love of science? Are not all the applied arts, and the applied sciences too, followed for gain? And is not society benefitted, even though the individuals be handsomely paid for their labours?"

Brown.—"I beg of you to debate fairly, and not to misrepresent my arguments. You know as well as I do that you are distorting my views, and that I have never objected to photographers earning their livelihood by the honest exercise of their profession. It is the dishonest exercise I object to—to the manner in which they follow it—so that they are neither honest to themselves, to their fellow-workers, nor to the art they cultivate. Don't rush off at a tangent, and refute ideas I never entertained; and do not think, when you show the absurdity of these notions, that you are refuting me. So far as you have gone, I am entirely with you. It is because photographers do not follow in the reasonable wake of the higher class of artists or the lower class of art-workmen that I denounce them. These people do not run their crafts to the dogs by underselling each other."

Protagoras.—"Did you not say that all who followed photography did it for what they could get out of it?"

Brown.—"Yes; and, speaking generally, I maintain it."

Protagoras.—"And do not artists follow their craft for what they can get out of it?"

Brown.—"Well, yes; speaking generally again, I repeat yes. I give you the benefit of the full admission: and what do you make out of it?"

Protagoras.—"Why, if you admit that artists and photographers follow their businesses for what they can get, I maintain that you exonerate the photographers from all the damaging charges you have made against them, and that your case falls to the ground."

Brown.—"I pity your innocence then. Do artists adopt the cut-throat policy that prevails with photographers? Do they pirate each others works? Do they break the laws of copyright? Are they brought before the police courts for the dishonest and the indecent practice of their art? Are they not an honour instead of a scandal to the land?"

Protagoras.—"There you go again. You rake up these dirty instances, as if they were the practice of the bulk of the profession. I am ashamed of you, 'Brown,' for your narrow one-sidedness."

Brown.—"I cite these cases, which I know are extreme ones, because they show the spirit that, more or less, pervades the whole of you."

Protagoras.—"I know more about professional photographers than you do, and I assure you that you do them a great injustice."

Brown.—"With what you and others have told me, and with what I have seen myself, I also know a good deal about them; and, as a class, I call them conceited, illiberal, and ungenerous, to a considerable degree. I used to be very fond, years ago, when my mania was on, of going in to photographic places of all kinds. Wherever I saw a display at a door or window, I used to have an itching to talk with the photographer. I often accompanied my friends to have their portraits taken, and I used to go in the dark room and see the negatives developed."

Protagoras.—So because photographers talked to you freely, allowed you into their sanctums, and permitted you to see them work, you call them ungenerous, illiberal, and conceited?"

Brown.—"Certainly not, Mr. Cantankerous."

Protagoras.—"Don't lose your temper; explain yourself instead. Did they not freely show you their works?"

Brown.—"O! yes, provided they were not too busy. But I invariably noticed one thing: how greedy of praise they all were. So long as I continued to admire everything, all went well; but if I ventured to point out what I thought was not good, it was remarkable the change in behaviour. Each one seemed to be enamoured with his own productions, and spoke—and, I believe, really felt—as if his photographs were the very best that were made. I also noticed that the worst photographers were always the most conceited. At that time I used to carry in my pocket two or three very nice photographs, and I sometimes showed them. Though the photographer was blind to the faults in his own work, it was astonishing what defects he could discover in these prints. If the photographs in my pocket were produced by a man a hundred miles distant, they would sometimes be acknowledged to be 'not bad;' but I never knew a portrait-taker to acknowledge that a man in the same street, or the same town, produced better photographs than himself, especially if the other man got the most patronage. Did you not tell me yourself that when some beautiful portraits were first exhibited by that Frenchman—I forget his name"—

Protagoras.—"Adam-Salomon?"

Brown.—"Yes, Salomon—how annoyed you were at the ungenerous criticism they received from photographers? how their good qualities were attributed to dodges and trickery—to everything but superior skill? You cannot forget that. On these grounds I justify the charges I have made—egotistic exaggeration of the goodness, and obstinate blindness to the badness, of their own works; their detraction of the good qualities of the works of others; and their unwillingness to attribute merit and success in others.

Protagoras.—" Why, these faults are not peculiar to photographers. They are the very ones for which artists are so notorious."

Brown.—" You mean to say, then, that though photographers have not the good points of the artists, they have full possession of their bad ones? I agree with you there."

Protagoras.—" Don't be so severe, 'Brown.' You do make yourself so disagreeable. I don't admit anything of the kind. These faults are found in every profession, and belong to our poor weak human nature."

Brown.—" Photographers must have a plaguey lot of human nature then."

Protagoras.—" Be serious—do. I avow at once that there are, unfortunately, now in the profession those who abuse the art, and bring discredit on it; for these I offer no justification. You may say what you like about them, so that you do not associate them with respectable photographers. These latter, I maintain, conduct their businesses on the highest principles of honour and uprightness."

Brown.—" I am not so sure about that. Let me test your assertion by hard fact. A few months ago I had my portrait taken by Mr. T. R. Williams; it was a vignette, and a very good one. Now, suppose I want a copy made from that portrait for a locket; I know that in common justice, as well as in common prudence, I ought to go to Mr. Williams to get it done. But suppose I act as the general public do, and that I take it to another—say Mr. Blank—will he, Mr. Blank, refuse to do it because he did not take the original photograph? Not he; he will most probably say, 'Ah, this is a nice print; I don't often get such a good one to copy. I will make you an excellent picture of this.' If he were a man of principle, such as I should like photographers to be, he would say, 'No, sir, this is Mr. Williams's work; you had better take it to him, and if he declines I will do my best to please you.' This is what he ought to say."

Protagoras.—" But you forget—"

Brown.—" Hear me out. Suppose, instead of a locket picture, I want an enlargement made, and I go to another respectable man—say Mr. Dash—will Mr. Dash tell me that I had better go to Mr. Williams, as he, Mr. W., having the negative, can produce a better thing than he, Mr. Dash, can do, by merely copying from the print? Nay. Further, supposing I want another dozen copies, and, either from ignorance or fatuity, I go to another respectable man—Mr. Star, for instance (and Mr. Star is known by everybody to be a first-rate photographer)—will Mr. Star have the candour to tell me that as Mr. Williams possesses the original negative, he can furnish better prints than can be supplied by merely copying this one? No. In every instance the job will be undertaken, and not a syllable will be uttered as to what I ought to do. You see in each instance I ignore the pirate copying fellows who would willingly do any mortal thing I wished, especially if I sent postage stamps in advance. Instead of that, my supposition is, that I go to the best men among you; and you cannot deny the truth of what would occur. Is this the code of honour that ought to exist among you—the proper principles that ought to actuate you?"

Protagoras.—" Well, I cannot deny that a very bad practice exists. But, you see, if the respectable men did not do it, the common fellows would, and the best men would needlessly suffer by their scruples."

Brown.—" Well, that confirms what I have said, that, high and low, you are a bad lot; that the true principles of honour and justice do not exist among you; and that you are not true to one another. You have no high-souled principle to support you; you mutually undercut and run each other to the ground. The public see through all this, and take the advantage, such as it is. I have instanced only this simple example of copying a carte-de-visite, but the bad principles that govern you work equally injurious in many other ways."

Protagoras.—" As you see so cleverly through it all, what is your remedy? With your shrewdness, you must see some way out of the difficulty."

Brown.—" I see no way out of the difficulty. I have no remedy. You are the defender of things as they are. It is for you to find a remedy. By-the-bye, you promised when you began that you were going to refute me."

Protagoras.—You wouldn't let me speak. You are such an awful talker. I couldn't get a word in edgeways scarcely. But I feel I have a lot to say, and you shall have it yet. The fact is, you rake up all the disagreeable and unpleasant things you can, and you lay them all down to photographers; you exaggerate the abuses, but say nothing of the uses; you paint the weak parts in the blackest colours, and you ignore all the good ones. Your language is so satirical, sarcastic, and severe, and your style is so bitter, sneering, cynical, and "—

Brown.—" *You* may call this argument, but *I* call it personal abuse. I can stand a good deal, but this is too strong. I'm off. Good night!"

PHOTOGRAPHING THE ECLIPSE IN AMERICA.

We have received advance sheets of copious reports of the various eclipse expeditions in America, of the successful operations of which we have already given our readers some details. As in the German expedition last year, under charge of Dr. Vogel, the arrangements appear to have been very carefully made, and the operations rehearsed, so that everything might be in order, and unexpected sources of failure avoided. Special apparatus and optical appliances were, of course, necessary, but the chemicals used, Mr. Wilson remarks, " were after the ordinary formulæ often repeated in our pages, and commonly used in the galleries of our best manipulators. As we have said, they were all prepared in Philadelphia before our departure."

We have fullest and most interesting details of the Mount Pleasant, Iowa, expedition, under the charge of Prof. Morton, being that the expenses for which Congress had voted five thousand dollars. Our friend, Mr Wilson, gives a very graphic account of his own operations whilst assisting in this expedition. The time being at hand,

> Plates were prepared at once ready to get a picture of first contact. Prof. Watson was to signal us by lifting his hand at the moment. Our plate was in the camera and the slide drawn, while we watched for the signal. Up went the hand; click! went the stop, and the first exposure was made, the plate showing on development the least contact, looking like the impression made upon an apple by the thumb when testing its ripeness. Negatives were then made at intervals of five to ten minutes until totality took place, and after totality until the eclipse was ended and over.
>
> "Totality will occur in six mintues," cried Prof. Watson, as agreed. "Totality will occur in six minutes," we re-echoed to our co-laborers in the dark room, and soon after the plates began to appear. Totality came, lasted two minutes and forty-eight seconds, and four exposures were made. There being plenty of men to work their parts, all things worked smoothly and well, and our expedition was a grand success!
>
> Three of our party, however, were martyred to science, and these were the men in the dark room. More persons living in the United States have seen Niagara or the Mammoth Cave or the Yo Semite Valley than have seen a total eclipse, and it will be A.D. 1901 before another can be seen, yet these men stuck to their work like heroes, and saw nothing of the totality.
>
> * * * We had read many descriptions of a total eclipse; had studied up the matter with photographic views of one: thought we knew just what to expect, and how it would look. Our information on the subject only added to our surprise.
>
> Our position enabled us to watch the progress of the eclipse nicely. About a quarter of an hour after contact the diminution in the light began to be quite perceptible, and near totality the air became so much cooler that having a linen coat on we wished for a warmer one. The air seemed as it does when a storm is gathering overhead; a bank of clouds in the south, which were not visible when the sun was shining fully, now began to assume colour—first a silvery glare,

then grey, then yellowish, and finally a bright orange-red colour. The blue of the sky changed into various colours too, and our companions' faces began to assume rather a livid appearance. The changes were very gradual. With our mind upon our work, anxious lest we should fail, we had less opportunity to watch the phenomena than we desired, but what we saw we remembered. Totality took place. It was dark, but not the darkness of night. These papers could hardly be read at the time. We have seen moonlight nights brighter than it was then. We could all readily see to do our work. As we had chances to lift our eyes upward, Oh! what a sight met them. A moment before, and the narrowest rim of the sun was shining so brightly the eye could not gaze upon it without pain. Now the struggle is over for the moment; the moon has gained the mastery, and the sun is eclipsed! The light had passed away instantly, like the flames of a great fire sometimes do when, with one grand leap upward, they fall suddenly, mastered by the water thrown upon them—like the snuffing of a candle in a dark room.

Mr. Wilson thinks that no eclipse pictures have before been so successful as these obtained on this occasion. Prof. Morton, in his official report, describes the apparatus used. We give a condensed extract from the report, bearing especially on the photographic operations:—

It was a question of much moment to decide whether we would follow the plan adopted by the French and German expeditions of last year, and make the photograph in the principal focus of the object-glass, thus securing great intensity of light in a small image, or follow the method employed by De la Rue in 1860, when he used an ordinary Huygenian eyepiece so placed as to produce an enlarged image of the first image from the objective.

After a careful study of De La Rue's report and pictures, as also those of the later expeditions, I came to the conclusion that the plan of enlargement presented many advantages, and should be followed by us, with certain modifications. * * * The exposure was made by means of a diaphragm plate, moved across the axis of the instrument, being drawn downwards by a spring. * * *

A number of diaphragm plates were provided with slits respectively of one-fortieth, one-thirtieth, one-twentieth, and one-tenth of an inch in width. These plates could be readily interchanged, and, in combination with the springs, gave a very wide and yet delicate series of fixed adjustments for the lines of exposure. * * *

It was found by experiment that, with a clear sun, it was necessary to reduce the aperture of this telescope (which was four inches, and fifty inches focus) to one and a-half inches, and to use all three springs and the diaphragm slide of one-fortieth inch aperture, in order to get a proper exposure when the solar image was enlarged from .6 inch, its diameter at the principal focus of the objective, to two and a-half inches on the ground glass. The same size of aperture was adopted for the larger instruments during the partial phases, the entire aperture, in all cases, of course, being used during totality.

* * * * *

During the partial phases, accurately timed exposures were made by all parties, at intervals varying from a few seconds to ten minutes, and during the totality thirteen pictures, in all, were taken with the three instruments. Of these, six were made at Burlington, with exposures of five to seven seconds; four were made at Ottumwa, with times of exposure ranging from five seconds to sixteen. These are all admirable negatives, which show abundant detail, and, in some cases, much of the corona. Three pictures in totality were also made at Mt. Pleasant, but, for want of a clock-movement, are inferior to the others. One of the Ottumwa pictures, exposed at the very last instant before totality, shows a photographic record of the curious phenomenon known as Bailly's beads, being simply the last glimpse of the sun's edge cut by the peaks of lunar mountains into irregular spots.

One of the objects which it was considered desirable to secure, if possible, was a view of the corona. It was with this intent that some of the exposures were made so long.

Examination of the negatives shows us that five seconds was more than sufficient to secure all the details of the protuberances, although it gave no decided indication of the corona.

The development proceeded slowly in all but a few spots where very massive prominences were located, and thus it was not thought at that moment judicious to try shorter exposures; but, in the light of our present experience, we would judge that exposures of even one or two seconds, with persistent development, such as could be best carried out on albuminized plates, would be of value to secure details in the rounded and massive prominences which appear at some points.

It is a curious coincidence, that in this case, as well as in the pictures made by De la Rue in 1860, and the German and English party last year, all the more interesting prominences are situated on the border of the sun furthest from the advancing moon, and are thus best shown in the pictures first exposed.

Dr. Curtis, of the United States Army, had charge of an expedition, observing at Des Moines, Iowa. Speaking of his appliances, he says:—

The telescope used was the large equatorial of the U. S. Naval Academy, at Annapolis, Md. This instrument has an object-glass seven and three-quarter inches clear aperture, and nine and a-half feet focal length. It was fitted up with a camera-box of such proportions as to carry negative plates seven inches square, upon which the image of the sun, enlarged by an eye-piece, appears four inches in diameter. Two spider line position wires, crossing each other at right angles, were adjusted in the eye-piece at an angle of 45° to a parallel of declination. The arrangement for making the exposures was as follows: At a distance of about two and a-half inches from the end of the eye-piece a partition ran across the camera-box perforated with an aperture just large enough to admit the entire cone of rays from the eye-piece. Immediately in front of this partition there slipped freely through rebated slots in the side of the box a slider of wood twenty inches long, pierced with two apertures of the same size as the hole in the fixed partition. These apertures were fitted up differently, one with an instantaneous slide for use during the partial phases of the eclipse, and the other with a simple sliding shield to allow of more prolonged exposures during the totality. Either aperture could be brought over the hole in the fixed partition by simply running the slider to and fro for a few inches, and in either position the latter was held in place by a spring bolt on the side of the camera-box. The instantaneous slide was a rectangular plate of sheet brass having a slot in it, whose width could be varied at pleasure from the merest slit to a rectangular aperture half an inch in diameter. This slide ran freely on two brass guide-rods, around one of which was coiled a fine steel wire spring, to give the instantaneous motion. The slide, when drawn up against the spring, was held by a wire loop catching over a little pin projecting from a hair trigger attached to the free end of the wooden slider. This loop was released by the lightest touch upon the trigger, so that the timing of the exposures could be made with the utmost accuracy. The second aperture in the slider, for use during the totality, was fitted up with a movable shield of very thin brass, which could be rotated to and fro by being attached by a catgut cord to a milled head at the end of the slider, near the trigger of the instantaneous slide. By means of these two apertures in the wooden slider, the change from the arrangement for the partial phase exposures to that for the totality could be made in an instant of time.

The exposures actually used during the eclipse were excessively long, owing to the unfortunate weather that prevailed at Des Moines. Though the sky was cloudless and clear enough for observations with the eye, yet the dense haze that filled the air, rendering the whole western sky white instead of blue, was fatal to quick photographic work. During the partial phases, instead of two inches, the entire aperture of the object-glass, large as it was, and the whole diameter—half an inch—of the instantaneous slide, had to be used to secure sufficient exposure, and during the totality the two plates, for which alone there was time, were exposed respectively sixty-six and forty-five seconds, and even with this excessive exposure the development of the image was very slow. There were obtained in all one hundred and twenty-two negatives of the eclipse, two being of the totality. These latter were timed exactly right for the red protuberances, and show the most exquisite detail in the structure of these strange appendages to the sun, especially in a group of faint fantastic forms on the eastern limb, which, throwing out long tongues of light, have the appearance of delicate flickering flames, in many cases entirely disconnected from the surface of the sun. The corona, stronger in some parts than in others, is also shown around the entire periphery of the moon. The large size of the negatives, the moon's disc being represented over four inches in diameter, adds to the distinctness and beauty with which the fainter and more delicate prominences are depicted, and it is believed that as photographic representations of the form and structure of the red protuberances these negatives stand unequalled.

Our plan of operations was as follows: Seven negative baths were used, standing in a trough of water to keep them cool; four plate-holders, and a large wooden trough with grooved sides similar to a negative rack, and capable of holding one hundred and fifty negatives. This was filled with a weak solution of hyposulphite of soda, and provided with an overflow pipe. The wall of the dark room adjoining where the telescope stood was fitted with two dark valves or dumb-waiters, by which the plate-holders could be passed in and out of the dark room without the admission of light or the necessity of any of the operators moving from their places. The first operator's duty was to coat plates and put them into the baths; the second took them out, wiped their backs, put them into the plate-holders, and passed the latter out of the room by means of one of the dumb-waiters. The third operator—he at the telescope—took the plate-holder from the dumb-waiter, placed it in the camera, adjusted the telescope, exposed, noting the time by a chronometer standing at his elbow, strapped to a tripod stand, returned the holder to the dark room by the second dumb-waiter, and recorded the time of exposure on a sheet of paper tacked to a shelf. The fourth operator took the plate from the holder, developed, washed, and then dropped it into one of the grooves in the large fixing trough. There the plates remained, slowly fixing, till after the eclipse was over; then they were taken out in the same order in which they were put in, washed, and numbered with a diamond. By this even distribution of labour, and by the help of the dumb-waiters and the large fixing trough, negatives were taken at the rate of one every even minute during the eclipse—one hundred and twenty-two in all—with the utmost ease and deliberation. Each operator had about fifteen seconds to spare with each exposure, so that all were enabled to perform their duties coolly and carefully.

Negatives of the sun were also taken on eight different days preceding the eclipse, and on the two following, and preserved as records of the appearance of sun-spots before and after that event.

There was nothing unusual in the photographic processes employed. A cadmium and ammonium collodion was used, a forty-grain bath slightly acidified with nitric acid, a rather weak iron developer, and hyposulphite of soda fixing bath.

Various other photographic observations of the eclipse were taken, but these recorded were the most important and interesting.

COMETS AND THEIR CAUSE.

BY B. W. KILBURN.[*]

MR. B. W. KILBURN, Littleton, N. H., one of our most able landscape photographers, has sent us (*Philadelphia Photographer*) a plan for the eradication of that interesting little but troublesome luminary, which so frequently mars the beauty of the photographic heavens, which will be gratefully received. He has, no doubt, traced the cause to the true source, which may be proven effectually by trying the experiment of producing them. He writes as follows:—

With me comets were a source of great annoyance for a long time, but they appeared almost always under similar circumstances. I looked for the cause in my chemicals, but without success. I finally found the cause in my glass and dust brush. In certain states of the atmosphere there are minute globules of moisture deposited on the glass and in the brush, and when the brush is used, it makes a marking on the glass resembling a comet. This mark in extreme cases can be seen faintly, resembling ground glass, but not always to be discovered with the naked eye.

The remedy is made plain by the cause, and is effectual with me always. Re-clean your glass with alcohol and a clean piece of cotton flannel; then thoroughly dry your brush, or, when this cannot be done, dry your glass in the sun before touching it with the brush. This being done carefully, one great cause of comets will be effectually removed.

Heretofore I have supposed that comets were always produced by dust on the plate, or some foreign substance in the collodion. This I know is not always the case by any means.

LABORATORY MEMORANDA.

BY M. CAREY LEA.[*]

COMFORT and satisfaction in carrying on operations in a work room or set of rooms are greatly dependant upon little matters of arrangement—matters that often seem almost too unimportant for special attention, or which have been overlooked until too late. Habit also will, in many cases, lead us to be content with arrangements in which small changes, if properly understood, would result in a saving of both labour and time. It is this consideration that leads me to set down a few suggestions which, though they may seem trivial, are really not so, at least to those who desire in each day to accomplish the largest sum total of work.

Tables.—Almost all tables arranged for laboratories are too high by several inches. Twenty-nine to thirty inches is the common height; it should be twenty-six to twenty-seven. Most manipulations are performed not on the table, but over it. In heating operations, the object exposed to heat is almost always at some little height above the table, and if this last be too high the operator does not see the object upon which he is working with the same facility as if the table were lower. He is obliged to stand more, and is sooner fatigued.

It is always a mistake to put drawers into a laboratory table. Accidents will happen, vessels will boil over or break, liquids are spilled, and, sooner or later, the contents of the drawer are rendered worthless.

On the other hand, a case of drawers so placed in front of the table that the operator has room for a chair between—a chair with a pivot, so that he can turn in a moment to the case of drawers and obtain whatever he wants (filters, corks, cork-piercers, files, writing diamonds, &c.)—such an arrangement is exceedingly convenient, and the articles themselves are safe from danger.

Water Faucets.—To have hot water as well as cold at command from the tap is exceedingly convenient, and a new sort of cock lately introduced is most excellent. Frequently we wish to introduce tepid water into thick glass vessels, which will not bear hot water without great precaution. The faucet to which I refer has but one mouthpiece, but has two handles or keys. If one be turned, hot water runs from the spout; if the other, cold. By turning both at once, and regulating the amount to which both are turned, we get a stream of tepid water of just the temperature we desire, the hot and cold being thus mixed in the pipe. I have recently had two sets of these put up, and find them very useful.

A Tray, supported on two X shaped pieces, running on castors, and standing about as high as an ordinary table, I find very convenient for transferring apparatus from one room to another, or from one part to another of the same room. Many journeys are saved by the quantity that it permits to be moved at once.

Gas.—The best method of arranging gas is to have pipes coming from the floor up through the tables at all such points where it is intended to work. Each tube passes perpendicularly through the table; at a height of two or three inches above the table it has a branch right and left, for slipping on rubber tubes. The main stem continues eighteen inches or two feet above the table, and terminates in an Argand burner. The convenience of having such burners everywhere round, and to have at command a strong light just where wanted to continue one's work, when daylight fails, without a moment's intermission, is inappreciable.

Examining Negatives.—Those who do not keep by them a regular retouching desk will find the following arrangement very convenient: A piece of smooth pine board, about eighteen inches square, has an upright piece attached at each side, about six inches high in front and eight or nine back. A groove cut in these lets in a piece of finely ground glass, on which the negative lies; a ledge in front keeps it from slipping down. A piece of looking-glass laid underneath, or even a piece of clean white paper, sends up light enough, and the negative may be studied at leisure, and any little retouching that may be wanted can be conveniently done.

Precautions against Fire.—The photographer deals with some singularly inflammable substances, and no one who works, as he does, continually with alcohol and ether, can consider himself safe from danger by fire; therefore it is a useful precaution to have a piece of india-rubber hose of a diameter suitable for putting quickly over the water faucet, and of length sufficient to carry water instantly to any part of the premises. It should not be forgotten that water will not extinguish ether, because the ether floats upon the water, continuing to burn, and is thereby extended more rapidly. Wet sand is the best means of extinguishing ether.

Those who are temporarily or permanently out of the reach of illuminating gas are driven to use alcohol. Alcohol lamps, in any but the most careful hands, are a most fruitful source of accidents, and, even where the best of care is taken, are not very safe. The glass alcohol lamps with ground caps are especially dangerous. I have repeatedly had these blow up, throwing the burning wick and spirits of wine in various directions, so that I have wholly abandoned their use under any circumstances. Even when a channel has been carefully filed in the cork, I have known them explode and where this is not attended to the danger is very great Explosions are most apt to come when the lamp is used for heating. The heat is sent down again from the surface to which it is applied, the lamp becomes warm, the air within expands, and drives out the wick. As just said, a channel should always be filed in the cork—a sharp notch lengthwise, made with a three-cornered file. But sometimes, again, the air inside seems to take up enough alcohol vapour to become explosive, and accidents happen in this way as well as from expansions. Wherever gas is attainable, no one should admit an alcohol lamp into his laboratory; but where they are a necessary evil, the "Berzelius lamp" is the best—the body of the alcohol is kept cool. But even with these, a little tilting sends a burning stream of alcohol over everything in the way. As alcohol can readily be extinguished by water, it is less seriously dangerous than ether.

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[*] *Philadelphia Photographer.*

Labels.—Those who trust to mucilage for fastening labels to glass will find them in time drop off, thus giving rise to inextricable confusion. Paste is the only suitable thing for use, and it may be made to keep almost indefinitely with the aid of carbolic acid. A drachm of carbolic acid to eight ounces of paste is what I have used with great satisfaction, and always keep it by me. Labels should never be written on thick paper; there is treble the danger of their becoming detached. The paper need not be very thin, but stiff writing paper is to be avoided.

CUTTINGS OF FIXED PRINTS WORTH SAVING.

BY P. C. DUCHOCHOIS.*

Photographers generally think that "cuttings of prints previously toned and fixed contain so little silver as scarcely to repay the trouble of collecting." This is true for cuttings of vignette prints, but for the plain ones it is a mistake which has been the cause of great loss to many of your readers, for nearly all the treatises on photography (even Hardwich's) affirm that they do not contain enough silver to pay for their saving.

To correct such an error, and to give an idea of what is lost, I have saved my cuttings of fixed prints for about six months. The ashes weighed thirteen pounds, avoirdupois. I fused them, and here is the result:—

Gold and silver collected:		
27½ pennyw. gold, a 1.35 currency		$37.12½
12¾ ozs. troy silver, at 1.75 ,,		22.31¼
		$59.43¾
Expenses of collection:—		
7 crucibles, at 60 cts.	$1.20	
35 lbs. bicarbonate soda, at 9 cts.	3.15	
14 bushels coke, at 10 cts.	1.40	8.75
	Profits	$50.58¾

ON THE CHEMICAL REACTION OF LIGHT DISCOVERED BY PROFESSOR TYNDALL.

BY PROFESSOR MORREN.†

After referring to Prof. Tyndall's researches, which he himself had verified, and mentioning that Tyndall had used chiefly the electric light, and had caused it to act mostly on organic bodies, he added: I have followed, in this respect, a quite different method and object.

Most favourably situated with respect to solar light, in Provence, where for months together we enjoy a cloudless sky, I purposed to limit myself to the use of the solar rays only, and to confine myself to those conditions which the atmosphere affords us. I have carefully avoided organic bodies, the molecules of which are too complicated, and most difficult to follow in their multifarious evolutions. I have even preferred the simplest bodies of mineral chemistry, as offering an easier field of observation to the physicist desirous of arriving at clear and precise answers. * * *

At the outset I made use of an experimental apparatus entirely similar to Mr. Tyndall's: a crystal tube, eight or nine centimetres in diameter and one metre long, fitted at each extremity into a broad brass ring, luted with cement, and carefully planed in the anterior part; two plane pieces of plate glass perfectly transparent, resting on the ring, and slightly lubricated on the edges with a fat substance, constituted an air-tight closing under the action of vacuum. A glass cock fitted on each extremity, and let into the cylindrical rings, allowed of making the vacuum at one end and introducing at the other the gas or vapour on which the experiments were to be made. An extreme, if not absolute, cleanness, and perfectly dry tubes, are indispensable requisites.

When light arrives in the tube after its condensation by a lens—which everything induces me to believe not to have been achromatic in Mr. Tyndall's experiments, as in his apparatus two cones are formed joined at the apices; the first, the converging cone, with an orange-red periphery; the other, the diverging one, with a violetish-blue periphery; circumstances which I notice here, because the white molecules which are about to appear will often assume, in passing through them, the hues of the luminous bands in which they circulate. When the vacuum has been produced in the tube, the light passes through it without the cones being in the least perceived; the tube is optically vacuous. But when the gas or vapour is introduced, a blue cloud, or blue precipitate of an incomparable delicacy, appears after a varying lapse of time, first at the summit of the cones, then in the converging cone. As long as the precipitate is of that beautiful blue colour, the light which it sends to the eye is perfectly polarised, as Mr. Tyndall has described it. Then, by slow degrees, the precipitate increases, and slowly becomes white, the light emitted still remaining polarised; but as the sides of the tube lighted by the cones send to the eye light which is also polarised, and, as it were, the produce of a polariser, the whitish vapour of the cones then behaves like a thin polarising lamina under the inspection of the Nicol prism held by the observer; and when the two polarisation planes are perpendicular to one another, the whitish cone assumes a magnificent blue colour, exactly as thin lamina of selenite of the required thickness would do. But in proportion as the whitish precipitate increases, all polarisation disappears. The precipitate molecules become heated both at the summits of the cones and against the entrance glass plate, and there arises a motion, slow at first, which brings to the cones other particles of the body under experimentation, not yet acted on by the light; and as these particles are transparent and black, their intermingling with the white particles produces a series of the most beautiful, varying, and often most regular, images, such as have been described, with expressions of genuine admiration, by Mr. Tyndall.

The precipitated molecules seem to increase in diameter, and the two cones are then resplendent with reflected light. But there are for the eye certain points where the cone takes a fine rosy colour, and the position of these points varies in the course of the same experiment. They are sometimes on a line which forms an angle of 45 deg. with the axis of the converging cone, sometimes on a line forming an angle of 90 deg. + 45 deg. with the same axis. There is, as in the rainbow, a line of position, and for the precipitated molecules a zone of efficacious rays which will provoke special and ulterior inquiries.

Let me resume the exposition of facts already so well described by the English physicist.

It will be easily seen that either a synthesis or decomposition of a body has taken place—*i. e.*, a new grouping of the atoms—when, under the influence of concentrated solar light, the blue cloud invades the cones.

The first body of which I have attempted the synthesis is that which I have so often and so easily obtained by electricity, in causing the induction spark to pass through a gaseous mixture formed of 1 oxygen, 2 nitrogen, 3 SO^2.* It is the compound which is formed in the leaden chambers in the preparation of sulphuric acid.

I submitted the gaseous mixture to the solar action immediately the compound was produced; the same gaseous mixture enabled me to recognise, like Mr. Tyndall, that the special rays which produce these reactions are neither the less refrangible calorific rays, nor the red rays, even when highly concentrated. I have for this object made use of the greatest variety of screens, smoky quartz, iodine dissolved in bisulphuret of carbon (CS^2), then coloured glasses, red, orange, yellow, green (but I dislike and I fear the glass screens; I prefer by far liquid screens). The action produced was insignificant. It became, on the contrary, extremely energetic with blue and violet glasses.

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* *Philadelphia Photographer.*

† Abstract of a Paper read before the British Association.

* Vide "*Annales de Physique*," vol. vi., fourth series.

It is, therefore, under the shock of the more rapid oscillations of the chemical rays that these reactions are produced. And here I wish to notice, in passing, an interesting fact, important especially for photographers. I mean the power of intercepting only the chemical rays of solar light, without stopping the luminous rays, possessed by a solution of bisulphate of quinine well filtered and confined by means of gutta-percha between two glass plates. This screen, of five millimetres in thickness, is of an extreme transparency to light, but the chemical rays are intercepted. It might be advantageously used instead of the yellow glass, which in photographic operations casts on all objects such peculiar hues as require a special education of the eye which has to judge the reactions.

This screen proved inestimable to me, as it allowed of my disposing and regulating the apparatus suitably beforehand, while it enabled me to permit the chemical rays which the screen had intercepted to act at the proper moment only.

After the experiments on NO^3 2 SO^3, I tried to unite the most resistant bodies. I introduced into the tube hydrogen and nitrogen perfectly pure and dry, and my surprise was extreme when I beheld the formation of the white cloud. This unexpected result, and one which I had considered as utterly impossible, obliged me to look still more closely into the matter, and to proceed with still greater caution.

After describing the especial precautions to prevent the presence of any trace of volatile essence from the luting, the Professor proceeds:—

Under these circumstances I was very much surprised to see that a mixture of hydrogen and azote, perfectly pure and dry, produced the reaction-cloud. They had been dried by a very slow passage through pounded glass, which had been calcined and moistened with SO^3, pure and highly concentrated. I changed the desiccating substance, and successively made use of potash, chloride of calcium, phosphoric acid, all recently melted. In the three latter cases the cloud did not appear; the action was *nil*, and the solar light passed unperceived. What could the *sulphuric* acid then convey? Evidently some little *sulphurous* acid, for *sulphuric* acid is, in fact, a real emitter of SO^2, and always adds a certain quantity of it to any pure gas which passes through it in minute and successive quantities, and which acts, in fact, as an absorbent of a different gas; therefore hydrogen and azote cannot be united under solar influence when perfectly pure of other gases. But actually, what could the action of the sulphurous gas be?

I applied myself to a special study of SO^3, and have ascertained how easy the decomposition of this gas is. As soon as the light passes through it, the white cloud appears, and if its manifestation is followed with care, it will easily be seen that it is produced not only at the summits of the cones, but likewise on the blue periphery of the first part of the diverging cone, and in the interior of the converging cone. I know of no other body more sensible to luminous action.

But to return to the sulphurous acid. What was the substance, blue at first, then whitish, thus obtained? The two so different hues were merely the consequence of a difference in diameter; the first hue belonging to the bodies, perhaps atoms, precipitated in the minutest state of division. The white and pearly colours appear when the diameter has sufficiently increased, and it still goes on increasing. * * * It may be first observed that if you expose for a sufficient length of time SO^2 to solar action, the precipitated substance becomes sufficiently abundant for a sort of haze to become perceptible in the guage; a part of the gas has been acted on, and the two luminous cones, when moved about in the guage, find everywhere reflecting precipitated molecules. If the guage is left long enough in repose and darkness, the cloud collapses, forms a deposit, and the gas is restored to its primitive transparency. If at this point the guage be again placed under solar action, the same successive phenomena of haze and return to transparency may be repeated indefinitely, till there remains no more gas to be decomposed, which is a very long process, for the very formation of the precipitate intercepts itself the chemical rays which form it.

But since transparency has been produced, a deposit of molecules must have taken place; and in this case, if the guage remains in a horizontal position, and a broad slip of glass be placed inside it, it is on this slip that the molecules will be found. * * *

The atoms of the molecules of SO^2 are not able to support the shock of the undulations of the chemical rays; they divide into S and SO^3, 3 SO^2 becoming S and 2 SO^3. I have, during sixteen days of uninterrupted sunshine, from the 14th to the 31st of July, exposed to solar light 1,900 cubic centimetres of SO^2 in a gauge of 2,000 cubic centimetres in cubic capacity, and the decomposing action was, after that lapse of time, being still carried on in an always sensible and wonderful manner. It is evident that every day the solar action is only partial; it stops as soon as the precipitated molecules of sulphur in motion in the tube are abundant enough to intercept all the chemical rays as an opaque screen. The action of light on SO^3 was interesting to study; it is one of the most beautiful and instructive experiments which can be executed.

SO^3 smokes abundantly on exposure to air, and this effect is attributed to the absorption of aqueous vapour by this substance. This is not even exact, since in a perfectly dry vacuum the same phenomena takes place. In the gauge, with a dry vacuum of a-half to one-tenth of a millimetre, I had introduced a very fine thin tube containing anhydrous SO^3. When I broke the tube the little explosion, and probably the great and sudden expansion of SO^3 produced, scattered about the vapours of SO^3, which are white, and appear with a dazzling resplendency in the luminous cones. Here the chemical rays are powerless; they cannot destroy what they have produced. There is no more decomposition, but SO^3 is, if I may use the comparison, like water in the vesicular state in a medium in which heat is about to penetrate it. Insensible to the chemical rays, the sulphuric acid absorbs the calorific rays, on the contrary, with prodigious energy; and it is easy to see this absorption is so perfect that all molecular motion ceases instantly; the molecules remain motionless, as if busy sucking up the heat, and, as an aqueous vapour does when heated, they pass into the state of a transparent gas, assuming, previous to their apparent annihilation, all the most magnificent hues. If, during the operation, the cock is rapidly opened and immediately stopped, the great movement of molecules, so rapidly and so greatly produced, ceases at once.

We must stop here. Yet what results to be signalised?

Thus, for instance, in the most natural, perhaps, of all the groups that constitute the family of metalloids—those which comprise chlorine, bromine, iodine, and fluorine, strange anomalies are observed. Chlorine and hydrogen unite under the action of chemical rays, and form hydrochloric acid; the latter, either dry or humid, and prepared with pure crystals of mineral salt of chloride of sodium, cannot be decomposed by chemical rays of solar light; whereas hydriodic acid can, on the contrary, be deposited, it is true, and this circumstance must not be overlooked. It is very difficult to procure this gas free from atmospheric air. A curious circumstance in the examination of hydriodic acid is, that the first shock of light frees part of the iodine, which appears with its peculiar violet hue at the summit of the cones, amidst the movements which destroy the molecular edifices, and movements, perhaps, made by the calorific rays only.

Bromine presents the peculiarity that, as in the circumstance of the oxygen with chlorine, if pure and dry hydrogen is introduced with a small quantity of bromine into the little tube which is placed inside the gauge previous to the experiment, and which is broken before submission to solar action, after a few seconds the brownish colour of the bromine disappears, and hydrobromic acid is formed, smoking abundantly on contact with atmospheric air.

I could prolong still further the list of bodies submitted to this interesting means of investigation and experience. I shall limit myself to a summary of the theoretical considerations which these facts have impressed upon my mind.

We know that the calorific, luminous, and chemical rays are placed side by side, and even intermingled in the solar spectrum with undulatory lengths successively decreasing.

Now all chemical bodies may be classed in two series: the first (having sulphurous acid, SO^2, for prototype) comprises all bodies formed under the action of calorific rays; the second (having hydrochloric acid for prototype) comprises all bodies formed by the chemical rays.

The following are the conclusions which the foregoing facts induce me to admit.

If a body is formed and maintained under certain oscillatory conditions, the peculiar oscillations of the atoms which constitute its molecules must differ from those of the medium in which the body has been produced; but if this body is transferred into another medium in which it meets with oscillations isochronous to those of its own atoms, these oscillations increase, and the *vis viva* which the atoms acquire may become so great as to drive the atoms beyond the radius of their sphere of action. The atomical edifice is demolished, and as the constitutive atoms preserve, nevertheless, their peculiar affinities, they form a new edifice adapted to the oscillatory conditions in which they are now situated. Thus they escape the shocks of the creating medium by ceasing to vibrate synchronically with that medium, exactly as an elastic sonorous body does not vibrate and gives no sound when the aerial vibrations which strike it are not synchronous to those which it is capable of reproducing. But if the new edifice is again submitted to the action of other synchronous rays it is again demolished.

Most curious evolutions, which seem to ask of the chemist: (1) Under what peculiar circumstances and influences bodies are formed? (2) Under what vibrations precisely their atoms oscillate? (3) Finally, under what other vibrations the molecular edifice may be destroyed?

Ozone, and all bodies capable themselves of uniting with other bodies, would be simply molecules whose atoms would be possessed of a *vis viva* sufficient to animate and set in motion the atoms of the other body with which they unite themselves.

Will a *simple body*, even, always remain such for us, if it become possible to discover what oscillations have assembled the atoms of its constitutive molecule, and what can destroy it? Such is the question which the future lovers of nature and science may be one day enabled to solve.

One word more upon a probable conjecture. I had often seen that, under some circumstances not yet known to me, the concentrated action of solar light is not without effect upon atmospheric air; in such case an appreciable whitish-blue colour is produced. Then might it not be presumed that the fine whitish-blue vapour which in Alpine valleys bathes the foot of the mountains is produced by the action of brightly luminous sky under favourable and unknown circumstances of heat, light, and aqueous vapour?

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Correspondence.

ADHESIVE MOUNTS.

Dear Sir,—It has occurred to me that if mount makers would coat that part of the mounts on which the picture is to be laid with some adhesive material, it would expedite mounting, and prevent getting smears on the fronts from careless work. The prints could be drained and about half-dried, then laid in their places and gently patted down with a pad of soft linen. B. W.

109, *Western Road, Brighton, September 6th*, 1869.

[How does our correspondent propose to deal with the margins? If no margins were employed the plan might answer well.—Ed.]

FOCUSSING INTERIORS.

Sir,—Did you ever know a valuable hint given without being received by the ungracious retort, "As old as the hills?" If my suggestion prove of service to any photographer who has felt perplexed while endeavouring to focus a dark interior, it matters but little if the knowing ones pronounce the plan older than photography itself.

This, then, I would suggest: let an assistant stand at that distance from the camera which the photographer would select to focus for; then, as soon as the photographer is ready, let the assistant produce from his pocket a box of wax vestas, light it, and hold it in his hand until the process of focussing is over.

It is needless to enlarge on the subject; the mere suggestion is sufficient; the plan simple and self-evident.—I am, sir, L. G. Bensa.

PHOTO-CRAYONS AND PHOTOGRAPHS ON IVORY.

Sir,—Your Journal has, for the last few weeks, contained certain articles and paragraphs upon two distinct subjects which I propose to take conjointly for the consideration of your readers.

The two subjects are Mr. Sarony's photo-crayon process, and the art of photography on ivory, which two I will comment upon *seriatim*.

Firstly. Mr. Sarony's process can only be regarded as a mistake by all true lovers of art, the means taken to produce it being such as necessitate the sacrifice of all those minute gradations of light and shade which constitute the difference between pure and mongrel art, rendering that which in the original sun picture was sharply defined blunt and muzzy, and, in fact, degrading what was originally a faithful transcript of nature to the level of such abominable make-beliefs as, once upon a time, used to be "smeared-in" by school-girls with the aid of leather stumps. My first impression, on seeing a photo-crayon, was astonishment; my second disgust; my third, that it was a most successful attempt to make gold look like brass.

Secondly. I cannot but regard any process for producing photographs on ivory as worse than useless, because the phosphorus contained in all bony substances must ultimately form a compound with the nitrate of silver; and also because, by veneering on an extremely thin leaf of ivory (prepared with pumice-stone) upon a strongly printed photograph, all the advantages of an ivory surface are retained, without the counter-balancing disadvantages of chemical defects. As a miniature painter I have adopted this process for the last sixteen years with the greatest possible advantage.—I have the honour to be, sir, yours obediently,

An Old Miniature Painter and Photographer.

[We give insertion to the letter of our correspondent as an old photographer entitled to express an opinion, but we think that it is easy to show that this opinion has been formed without consideration, or on very insufficient premises. In the first place, in regard to the photo-crayons, he simply asserts them to be what they are not: he says they are on "a level with the abominable make-beliefs such as, once on a time, used to be smeared by school-girls with the aid of leather stumps." Now the especial defects of a school-girl's crayon drawing consist in bad drawing, bad light and shade, or bad colour; and as the drawing and light and shade are in the photograph, and are not influenced by the Sarony treatment, our correspondent's objection resolves itself into mere epithet of no value. He might just as easily, and with more justice, have likened the photo-crayon to one of the chalk portraits of Sir Thomas Lawrence. The truth is, that the drawing, pose, light and shade, &c., of the photograph are not altered; its texture only is modified, and that for the better. An enlargement, as a rule, is not so sharp or delicate as the small direct print; but the photo-crayon treatment softens all defects, and, when skilfully managed, gives a charming class of picture. The example our correspondent has seen is probably as fair a sample of the process as a threepenny glass positive taken in the New Cut is of the art of photography. Good judges of art, seeing good examples, pronounced them to be highly artistic.

On the subject of photographs on ivory, our correspondent's observation appears to have been singularly careless. He "cannot but regard *any process* for producing photographs on ivory as worse than useless," because silver combines with the phosphorus contained in all bony substances. Now, our first article was devoted to the production of phographs on ivory by a process in which no silver is employed—the carbon process. What then becomes of his objection to "any process" because of the silver compound? Undoubtedly ivory contains phosphates, and undoubtedly these phosphates will combine with silver, just as chlorides in paper will combine with silver; but when a print is fixed, all unreduced salts of silver are supposed to be dissolved by the fixing agent, and removed by washing. Hence there is no theoretical reason for believing that silver prints on ivory will be less permanent than silver prints on silver. The practical answer is best: there are many silver prints on ivory in existence, which, after many years, give no sign of fading. The use of a paper print fixed to the back of a very thin tablet of ivory is open to the same objection on the ground of permanency. If that print be removed or injured, or if it fade, the painted miniature in transparent colour, being dependent somewhat for its drawing and its force on that print, will suffer in proportion as the print may be injured.—ED]

DONATION TO THE PHOTOGRAPHIC SOCIETY.

SIR,—My attention has just been called to a paragraph in a contemporary of August 27th, to the following effect :—

> DONATION TO THE LONDON PHOTOGRAPHIC SOCIETY.—An announcement having appeared in a contemporary to the effect that Dr. Diamond, the late Secretary, has presented to the Society the sum of fifty pounds, we are informed by the President that the statement is incorrect.

The announcement referred to, and thus apparently authoritatively contradicted, I conclude is the statement made in my "Echoes" six weeks ago, in which I state that I had heard that Dr. Diamond had made a donation to the Society of between forty and fifty pounds. Now it appears to me a little disingenuous on the part of some one to misquote the announcement, and then call it incorrect. It *is* incorrect to state that Dr. Diamond had given the Society fifty pounds, but it is not incorrect—and I am sure that the President of the Society could not authorize any one to say so—that he had given a donation of between forty and fifty pounds.

To make the matter clear, it is necessary now to explain a little further, and I may state, in doing so, that I state the facts on unimpeachable authority. A balance of nearly ninety pounds—I do not know the precise figures—was due from the Society to Dr. Diamond on account of his salary as Editor of the Journal. Of this balance Dr. Diamond remitted half, making it a donation to the Society. This is the simple statement of fact. It will be seen that the "incorrectness" was really to be found only in the paragraph of your contemporary.—Yours, &c.,

THE OLD PHOTOGRAPHER.

CABINET MOUNTS.

SIR,—In the NEWS of this week, your contributor, "An Old Photographer," says the cabinet portrait is now all but universal. I am afraid there is not the demand for the cabinet mounts to justify the assertion. I have written to most firms for cabinet mounts with *round corners*, and cannot procure them, and am still in want of them. I have had specimens from different houses with round corners, and absolutely ordered them, had their invoice, sent them the money, and had it returned again. Another house sends me sample with round corners. I also gave them an order same as sample. They tell me also they do not keep them in stock. Now, both of those firms advertise in the NEWS, and one even states the colour of the mounts which I ordered from. I have written to about eight other houses, besides the one I deal principally with, and cannot get them. Can you aid me where I can procure them? I have tried all those houses who I consider sell cabinet mounts which advertise in the NEWS.—I remain, sir, yours truly,

Exmouth, September 4th, 1869. J. SUGG.

[Can any of our readers give our correspondent a hint where to obtain what he requires?—ED.]

Proceedings of Societies.

FRENCH PHOTOGRAPHIC SOCIETY.

A MEETING of the Society was held on the 6th ult., M. DAVANNE in the chair.

Mr. SUTTON presented the Society with a copy of his pamphlet, referring to a new instantaneous wet collodion process, and likewise a method of preparing rapid dry plates.

M. BORLINETTO forwarded a copy of his general treatise of Photography, a work published in Italian under the auspices of the Society for the Encouragement of Sciences of Padua.

M. MONTAGNA presented a copy of his work on Carbon Printing, and communicated the regulations respecting his offer of a silver medal for the best picture in pigments.

The Bengal Photographic Society forwarded the details of a photographic exhibition to be held shortly in India; contributions are requested from all photographers, who should accompany their specimens with an intimation as to whether the same are for sale. The Society also forwarded a copy of their Journal.

M. MARION presented the Society with a specimen of the photometer of M. Leon Vidal.

M. MAUVILLIN exhibited an apparatus for observing photographs under certain aspects. The instrument is intended for a toy, and enlarges and diminishes certain parts of a picture placed in it, so as to exaggerate those portions and render them grotesque and absurd. He also showed two other instruments: one denominated a stereorama, and the other a myriatrope.

M. DAVANNE made some observations on the numerous applications of iodine water in photography.

M. ANDRA, at the request of the Society, gave a practical demonstration of the transfer of carbon prints upon transparent and enamel plates. The prints produced upon carbon and bichromate of potash, having been prepared previously, were immersed in cold water, and afterwards placed upon the glass, care being taken that water should be interposed to prevent all access of air. The water being drained off, an intimate contact of the two surfaces is insured by passing a roller over the surface of the tissue. Thus prepared, the latter is allowed to dry, for the purpose of subsequent development. Some tissue which had been transferred and dried was developed in a few minutes under the influence of boiling water, and the images remained adherent to the surfaces to which they had been applied.

M. ANDRA likewise exhibited some galvano-plastic moulds destined for printing with a fatty ink: the moulds were produced direct from the glass to which the carbon image adhered.

The proceedings then terminated.

THE BOSTON PHOTOGRAPHIC ASSOCIATION.

A SPECIAL meeting of the Society was held at the photograph studio of J. W. Black, Washington Street, June 22nd. 1869.

Mr. LYMAN wished information from any photographer who saved silver from his solutions previous to 1860, as his firm was sued for infringing a patent for saving silver and gold from photographic solutions by any means whatever. He wished to know whether said artist did it openly, or kept his method secret, as it will be necessary to prove that silver was saved from photographic solutions, in a public or open manner, previous to that date, to break the Shaw and Wilcox claim.

Mr. SOUTHWORTH stated that he saved gold and silver from photographic solutions when he was in company with Mr. Hawes, as long ago as 1854.

The PRESIDENT (Mr. Loomis) gave his experience with the "Shaw" silver saving apparatus. Considered it more of a curse to him than a benefit.

Mr. T. R. BURNHAM also told his experience, which was very much like the last gentleman's. He now flows all his washings, but hypo, through a hogshead buried in the ground, and finds that it pays. Mr. Burnham also called attention to a swindler who was cheating photographers.

Mr. LOOMIS gave a very humorous account of how this same person had swindled him out of twenty-one dollars.

Mr. WING said he had been swindled by him out of twenty dollars.

On the motion of Mr. Low, it was voted that members of this Association, or others, wishing information upon any subject connected with photography, or wishing to present any questions for discussion in its meetings, may do so by transmitting them in writing to the Secretary.

Mr. Black suggested for a subject for discussion at next meeting, "How to Treat the Negative Bath to Produce the Best Results"

Mr. Black announced that he had received from Mr. J. A. Whipple the sum of fifty dollars, which was given for the benefit of this Society. A vote of thanks was passed.

Mr. L. J. Marcy, of Newport, R.I., gave an interesting exhibition of his oil-burning magic lantern, and also his apparatus for making transparencies with an artificial light.

The next monthly meeting was held on the evening of July 6th. 1869.

Mr. Black announced that he had received from Mr. David Sears, Junr., an amateur photographer, the sum of twenty-five dollars as a present to the Society. A vote of thanks was passed.

Mr. H. W. Tupper read a short essay on "How to Treat the Negative Bath to Produce the Best Results."

Mr. Low said that sometimes he filled his bath dishes too full, so that they would run over on plunging a plate. He found a small glass tube, about ten inches long, cut off square at the ends, and about three-eighths or half-inch bore, the handiest thing to take out the superabundant solution with. He plunged his tube into the solution, then, placing his thumb tightly upon the end of it, took out all the solution he wished. He had never seen it used before. Some used a little syringe, others a syphon; this seemed the simplest. He used glass baths without lips, and found that, by having a little tallow upon a shelf handy, where he could grease his forefinger and then run it around the outside end of the bath, where the solution usually follows down the end of the bath, that no solution would follow down and be spilled. By taking this precaution, a solution could be poured from a bath without a lip into a five-pound ether bottle, without spilling any of the solution. Before adopting it he used to place his bottles to hold the solution in porcelain pans, so as to catch the solution that would be spilled.

Mr. T. R. Burnham's method of treating his negative bath was as follows:—"I work a twenty-six quart bath of plain water, and from forty to forty-five grains silver to the ounce. Boil one half of it down once a month; filter when necessary. I made this bath, or its father, in 1866, and was the first to boil down of any one that I knew of then. Did it at that time in an iron porcelain kettle. When my bath gets sick, I give it silver, water, soda, acid, and sun, in quantities to fix it."

Mr. Black suggested as a subject for discussion at next meeting, "Collodion."

Talk in the Studio.

A "Touching" Story.—Archdeacon Denison was present at the East Brent harvest home on Thursday, and during the day delivered several characteristic speeches. Replying to the toast of his health, the Venerable Archdeacon said: He found the air of the place, as well as the kindliness of the place, produce almost a second youth, and he had a little story which he would tell, that might betoken a little vanity, but which would be followed by a sequel showing how people could be taken down. Friends said they wanted a photograph taken of him, and, as his stock was nearly exhausted, he had his likeness taken, and it was taken twice. In one of the photographs he appeared like a man of sixty-three years, as he was, and in the other as if he was about thirty-five, and both were taken in the same hour. His family—who were veracious people—said of the second, "How did you suffer such a face as this to come out? It makes you look like a boy." He sent a little girl, the daughter of Mr. Fowler, whom they recollected as his curate, one of the likenesses, and she said, "Dear mamma, how pretty he is!" (Roars of laughter.) He told that to a lady, and she, with that kindly sarcasm which the sex knew so well how to employ, and for which they could not be called to account, said, "I suppose it was a very long time since she saw you." (Much laughter.)

Streaks on Negatives.—A correspondent of the *Philadelphia Photographer* describes his discovery of the cause of stains and streaks on negatives. He says:—"My bath was quite strong at the time, say fifty-five grains silver to the ounce water; and after exposure in the camera, there was, of course, a quantity of nitrate of silver that would be carried forward to the opposite end of the plate from which the developer was flowed on, and which did not mix fully with the developer, and which would flow across the plate, when the developer was poured off the plate, at the same corner that it was poured on, and had just the same effect as pouring a strong solution (fifty grains) of nitrate of silver on to a plate which had been developed, but not washed. When I found the strength of my bath, and reduced it to forty grains, I had no more trouble."

Photography in Court.—A very interesting case was decided in our United States courts a few weeks ago by photography. It was a case of the United States against certain whiskey distillers for defrauding the revenue. The defence occupied judge, counsel, and jury for five days examining witnesses to prove that the stills and other apparatus were not in a position to make the fraud charged possible. The defence closing, the other side produced, for the examination of judge and jury, as their evidence, a package of photographs of the whole interior of the distillery in question, proving the perjury of the witnesses examined for five days back; the fact of the fraud being carried on as charged, and settled the whole case in a few moments, the jury deciding on the side of the photographs.—*Philadelphia Photographer.*

Photographic Conundrum.—Why is a photographer like a botanist? *Ans.* Because he makes the different kinds of poses (posies) a study. It's useless to try to beat a photographer in an argument, because he is sure to take the negative, and produce a positive proof.—*Philadelphia Photographer.*

Uncertainty and Trouble of Dry Processes.—Dr. Vogel says, speaking of the trouble of dry processes, that M. Braun, of Dornach, told him "that he had spent fifteen thousand francs on experiments with dry plates, and that at present he worked the wet process, under all circumstances, even on the glaciers, and the most inaccessible points of the Swiss alps. The results were more certain, and, in spite of the large amount of baggage to be carried, the working easier and less laborious than with dry plates. How much care and labour," he adds, "is necessary to produce a dry plate, long sensitising, washing with common and distilled water, covering with preserving solutions, covering the back of the plate, drying, &c. It is easy to pack chemicals, apparatus, and tent, in the same time which it requires to prepare a single dry plate, and if we add to this the very tedious development, I feel confident that the saving of labour and time is largely in favour of the wet process, and dry-plate photography must confine itself to places that are inaccessible to the tent."

Photography and Students.—The manual labour system at Cornell University appears to work well. One student supports himself by photography, another by cabinet making, another by printing, while others work on the farm. One young man, who sweeps the rooms and makes fires, has taken the first prize in science and German.

Newton's Toning Bath.—The editor of the *Philadelphia Photographer*, speaking of Mr. Newton's prints, says:—"The tones are bright in colour, varying from warm purple to warm brown, of exceeding richness and brilliancy, and all one could possibly desire. Mr. Newton claims that his bath is easy, rapid, keeps well, and of the results there can be no mistake. He generously gives us the details of his method as follows:—'Agreeably to promise, I send you the formula for producing those tones which you so much admired when I last saw you in this city. First, make a saturated solution of borax in hot water; second, dissolve one ounce of tungstate of soda in sixteen ounces of water, stock bottle; third, mix the contents of Nos. 1 and 2 in equal parts. With this make your gold solution slightly alkaline an hour or two before wanted for use. A toning bath thus prepared gives tones more satisfactory to me than any I have ever used, and I have tried almost every published formula for toning. The tones are different from any that I have been able to produce with any other bath. With the ordinary amount of toning, a warm purple is attained, very clear and brilliant, without any tendency to mealiness. If the toning is carried further, a soft, pearly, lavender tint is produced, combining with the purple, but not superseding it. A very beautiful warm brown tone, with a tinge of purple, is produced with this bath by toning less than ordinary; the prints for such toning should not be printed as deep as usual. If the tones are too purple, add more borax until the purple is dark enough to quit the bath."

The Extensive Seizure of Indecent Photographs.—Richard Groves, 18, Michael Saunders, 59, and Paul de Paris, 39, were indicted at the Middlesex Sessions for selling and uttering certain lewd and obscene photographic pictures. A witness was called, who detailed going to the shop as above stated, and asked Paul de Paris for a book that was in the window, which was handed to him, and for which he put down half-a-sovereign. Paul de Paris went out for change, and on his return he handed him nine shillings. The purchaser then asked if he had any pictures, and Paul de Paris inquired if he wanted "bed-room pictures?" and witness said "Yes." Paul de Paris went through a passage, and shortly returned with two photographic slides of an indecent description, which witness took away with him. He afterwards returned and asked for more pictures, and Paul de Paris asked him if he wanted them more broad than those he had before, and he said he did. The prisoner, Paul de Paris, then went to another house, and in a few minutes returned with Saunders. Paul de Paris shut the door, and took him into a back parlour, and then displayed a number of slides, from which he selected two, and Paul said they were five shillings and sixpence each. Witness went again and was taken to Saunders's house, where a number of pictures and books were shown to him, and Saunders was very energetic in praise of the slides, and he said they were worth a guinea each. He bought some of these, and brought them away. Inspector Brennan, of the F division, said he received from the last witness two photographic slides, and upon them he got a warrant. Witness then went to Wych Street, the house occupied by Saunders, and found a number of photographic slides of the same character as those produced. A verdict of guilty having been returned, the Judge said that as regarded Paul de Paris and Saunders the Court looked upon them as moral poison, almost as bad as that to the body, and they should receive no mercy. The sentence upon each of them was imprisonment and hard labour for eighteen months; but as regarded Groves, taking into account his youth, and the promise of his master to take him back into his own house, and thus sever him from all his former connections, the Court would merely call upon him to enter into his own recognizances in the sum of twenty pounds to come up for judgment if called upon. To show the extent to which this illicit trade has been carried, it may be mentioned that the officers seized at the shop of Groves, Holywell Street, 173 books of the most infamous description, 1,141 pictures of a most horrible description, and 65 photographs; at Paris's, 8 books and 32 pictures; at Saunders's, 9 books, 49 pictures, and 69 photographs: making a total of 190 books, 1,223 pictures, and 134 photographs. Large seizures were recently made in the same district, for which other persons have been prosecuted.

Air-Bubbles in Toning.—After prints are toned, sometimes spots appear upon them that resemble grease-spots. These are caused by air-bubbles in the toning bath, which bubbles occur from placing too many prints in the bath at once, or from want of care to keep the prints from adhering to each other while toning. Remember!—*Philadelphia Photographer.*

Retouching.—Mr. G. H. Hallenbeck says, in the *Philadelphia Photographer*: "I use for touching out transparent spots in negatives, and black spots in prints, the enamel taken from visiting and business cards. This style of card being very much used, the operator will not have much trouble, and no expense for material. First, moisten the pencil brush with water, and with the brush dissolve off some of the enamel, and stop out the spots. I find it fine for giving (which is sometimes needed) good high lights to the pupil of the eye, &c."

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To Correspondents.

Novus.—The white clippings from fixed vignettes are quite worthless. They should contain no silver; they cannot contain more than an infinitesimally small trace, altogether unworthy of consideration.

Vincent asks for the address of Mr. King, a manufacturer of apparatus. We regret that we cannot give him the information required. We do not find the advertisement referred to.

G. Redaway.—Many articles on reducing silver residues have appeared in the News and Year-Book. An article appeared in the News of July 30th last. In our Year-Book for 1857 you will find a brief but clear article, describing the operations from first to last.

H. S. (Red Hill).—The discolouration of your prints is due to the paper having been kept some time after having been sensitized. Some samples of paper discolour rapidly after sensitizing, and some will keep for many hours, or a day or two, without change. The use of a strong bath favours rapid discolouration, especially in hot weather. The discolouration in the prints you forwarded was removed by toning and fixing, as it is usually, unless very bad indeed. The discolouration which arises from contact with hypo, or from dishes which have contained hypo, consists in dirty yellow or brown stains. Your request that we should send you an answer "by early passenger train to-morrow morning" was quite out of our power to comply with; as the morrow was Saturday the 4th, and your letter did not come under our attention until Monday the 6th. Letters from correspondents on photographic difficulties rarely come under our attention until a day or two before it is necessary to provide the printer with the answer; and our engagements do not permit us in any case to send personal answers.

Somerset.—The question of costume for portraiture is, as you observe, altogether a matter of taste; but we should not consider the lady in the card sent at all "too much dressed up" for a portrait. The pose and general arrangements are good. The chief fault consists in a little want of sharpness in the face.

F. P.—You may without risk have a large amount of yellow glass in your dark room, provided it be of a thoroughly adiactinic character. In fact, we strongly approve of what is technically called the "dark room" being well lighted. It is difficult to develop quite satisfactorily with too little light, and a very dark room is apt to be kept in a slovenly, untidy fashion. Of course the room should not have any trace of actinic light. Intensifying after fixing need not always be done in the dark room, but it should not be conducted in a strong light.

M. L.—A skilful colourist, in finishing a photograph in oil, does not use simply transparent or glazing colours. A pretty slight effect may be gained by applying transparent tints to a good print, but not the effect of a solid painting. The transparent or glazing colours applied with macgilp are apt to discolour, and the medium to become leathery and opaque. A photograph well coloured in oil will, as a rule, be so solidly painted that the pictures would remain perfect if the photograph faded. 2. The cheapest and simplest work on colouring photographs is "Newman's Harmonious Colouring;" the other work you name contains much valuable information. On the subject of tuition we should endorse now what we said then.

V. R. P.—In all enlargements there is some loss of sharpness, as you must readily perceive. For instance, a line the hundredth part of an inch in thickness may appear very fine and sharp indeed. But if that line be enlarged twenty times it will be one-fifth part of an inch in thickness, and will, of course, look very course indeed. An enlargement to life-size will, therefore, generally look coarse, and be scarcely presentable without some retouching. 2. The Sarony photo-crayons are generally enlarged from six to eight diametres. The mode of treatment is essentially valuable in softening the harshness of enlargement, and, by its resemblance to crayon work, which is never very sharp, accounts for want of the sharpness of small direct photographs.

B. L.—By the term "old hypo bath," sometimes employed, a used bath is meant, not merely a bath which has been mixed some time. Sometimes the term is employed to desiguate the old bath of acid hyposulphite, to which gold was added in order to tone prints. A fresh hypo bath, which is a necessary agent in perfect fixing, simply means a bath which has not been used. It may be kept mixed for months, and still be regarded as a fresh bath if it have not been used.

D. C.—There have been various formula published for the lime toning bath. We find that two grains of chloride of gold, three grains of chloride of lime, in half a pint of water, mixed a few days or a week before use, will give a capital toning bath. 2. That which is spoken of as Lacey's toning bath was a lime bath, in constitution somewhat similar to that just given. 3. Chalk is carbonate of lime; but it is not customary to call the toning bath of gold and chalk a "lime bath." That term is generally reserved for the bath to which chloride of lime is added. 4. The reason why it is recommended to make a concentrated solution of chloride of gold into a paste or cream with chalk before adding the water is, that such a course much more effectually neutralizes any free acid present than if the chalk is added to the dilute solution.

Oxoniensis.—On the whole we should prefer the gum process. That process and the morphine process are about equal in sensitiveness; but if you have not tried the latter, it is better not to rely upon it for actual work until you have tried it. We have always succeeded with it, but many have failed.

J. D. Waymouth.—The photographs are very interesting. Thanks.

Erratum.—Under the head of "Photographs Registered," in our last, "J. Davies, Waymouth," should have been "J. D. Waymouth, Nailsea."

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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HERR ALBERT'S NEW PRINTING PROCESS.

We have pleasure in announcing to our readers that with the next number of the Photographic News we shall present an example of the new mechanical printing process recently invented by Herr Albert, of Munich. This process, allied to photo-lithography in principle, far surpasses in result any lithographic process hitherto made available in connection with photography, perfect gradation and half-tone being secured without perceptible grain of any kind. The subject of our presentation print is a vignetted portrait of a lady. Some additional particulars in our next.

◆

AN AID TO MANAGING THE SITTER.

"Professional artists, whether portraitists or painters of subject pictures, generally fail in posing a sitter for a photographic portrait." This observation, a very common one amongst photographers, was recently repeated to us by one of the most able metropolitan photographers. "And I will tell you why," he added; "the painter, besides being unfamiliar with the exigencies of photography, as regards the powers of the lens and the range of focus possible, is altogether forgetful of the fact that the expression of the face—one of the chief elements of value in a portrait—will be permanently determined during the few seconds which succeed his elaborate arrangement of the figure and drapery. Forgetful of this, he wearies the sitter, and drives all life out of the face. For his own purpose this would not matter, because he could wait until the expression came, or add it to the features from memory of a passing glance of what was required. But for the photographer, to whom the existence of the expression at the moment of exposure is imperative, this wearying and fussy system of arrangement fatal."

There can be no doubt that the observations of our friend were strictly correct, and many photographers have had annoying experimental verifications of their truth. The great disadvantage of the photographer, as compared to the painter, is the fact that with the former the expression of the moment of exposure is perpetuated without modification. The painter can wait until he educes the characteristic expression he wishes to perpetuate, or, failing that, he can draw upon his memory for the expression he has seen, but which has passed away. When Gustave Doré was driving through some lovely scenery, and devouring it with his eyes, he was asked, as we are told by Blanchard Jerrold, if he would not like to stop and make some sketches. "No, no," he replied; "I've a fair quantity of collodion in my head." He could seize and retain the impression without notes or sketches. The photographer might have a fair quantity of collodion in his head, and remember well the expression he wished his sitter to wear, but unless it is present at the moment when the collodion on the plate receives the image, it is of little avail that the photographer has a vivid impression of what he desires to portray.

A primary aim, however, with all good portraitists, must ever be the preservation of a happy expression in the likeness. In many respects this is the most important element in the picture, to which clean and brilliant photography, and even pictorial effect, should be subservient, and therefore arrangement of details should never be allowed to interfere with the chances of securing expression. But no single plan can be prescribed for carrying out this aim. Different sitters will require different treatment, and different portraitists will succeed best in different ways, each acting in accordance with his own idosyncracy. One with a bright, buoyant manner and happy audacity will manage to mould the sitter exactly as he desires, carrying the position by a *coup de main*; whilst another, attempting the same thing, would utterly fail, and probably offend his sitter in the attempt. The latter might, however, probably secure the same end by a little painstaking gentleness; whilst another would secure it by quiet, trust-inspiring decision.

An indispensable pre-requisite in all cases is, however, a knowledge on the part of the portraitist of what he requires; and, unfortunately, the photographer has scant time, and scanter opportunity, for obtaining this knowledge. Even if he devote himself wholly to understanding and posing the sitter, leaving the dark room work entirely to an assistant, his opportunity is slight enough; but when, as is the fact in the majority of instances, the photographer needs or chooses to prepare and develop his own plates, the time for studying the sitter is, of course, much reduced. But still the time need not be entirely lost if especial arrangement is made for utilizing it, and it is to this point we wish to direct especial attention.

Some time ago Mr. Blanchard gave a graphic account, at the South London Society, of the interesting and suggestive studies made of the sitter whilst he was in the dark room. In this room a yellow glass window communicates with the studio, and, through it, all passing there can be seen from the dark room, whilst the yellow glass and the darkness beyond do not permit the interior of the latter to be readily seen—so little, indeed, that Mr. Blanchard had often noticed ladies go to this window to arrange their head-dresses, under the impression that it was a looking-glass. In the account, in our last, of the studio of Mr. Kurtz, of New York, a description is given of a similar mode of study, and of a mode of utilizing it, which is worth attention. Whilst the sitter is awaiting the preparation of a plate, he is invited to seat himself in a chair on a small platform, which, running on wheels, was readily propelled into any position. This seat being placed carelessly in the room—not in "the place of execution"—the sitter seats himself at ease. Whilst Mr. Kurtz is in the dark room he has opportunity of observing his client in his natural habit of sitting; and, at times, he has opportunity of seizing some peculiarly graceful or characteristic pose. Without requiring the sitter to rise or move, the platform is wheeled into position, and the desired pose secured without any trouble. The hint is one certainly worth attention, both as to obtaining, where it is possible, an opportunity of watching the sitter unobserved, and also of securing the permanence of a good position without trouble to the sitter.

COMPETITION AND LOW PRICES.

A deplorable illustration of the ruinous effect on prices produced by unscrupulous competition is given in Mr. Stephen Thompson's "sketch" of Venice in our present issue. In the best part of the most public part of the city it appears that half a dozen shops are devoted to the sale of photographs. The size of the pictures is fourteen inches by twelve inches, and these, mounted on cardboard with a margin, are sold for a franc and a half each. A sum of fifteen pence for a mounted print from a negative fourteen by ten inches! And these photographs, it must be understood, are produced by the ablest photographers in the city. Signor Carlo Ponti, a name well known as that of a capable photographer and successful exhibitor at the last International Exhibition in Hyde Park, is one of the photographers who sell their works at the prices we have named. Signor Ponti, it appears, at one time obtained twenty francs, or more than twelve times as much, for precisely the same views. But, as Mr. Thompson phrases it, "one after another sprung up and cut each other's throats" until the prices reached the present wretched figure.

Mr. Thompson affords some explanations of the conditions which render such a price possible and in any degree remunerative. The pictures are sold by the producer without the intervention of any agency, and the price of labour is low. The cost of production being small is a fair explanation of low prices; but the absence of commission or profits of agency is scarcely so legitimately so. Some means of distribution must exist, and although the photographer may, under some circumstances, be able to do it at a cheaper rate himself than he can get it done, it is a suicidal policy to sell in retail form at wholesale rates. It is introducing a precedent dangerous for two reasons: first, because the facility of selling photographs of general interest—such as city views—direct from the producer to the customer is an exceptional facility, which should not, properly, affect the rule of price; and, second, because the argument would naturally follow that, in all cases of dealing directly with the customer, instead of through an agent, the prices ought to be on a similar scale, an argument which would tend to reduce the remuneration for portraiture at least in the same direction, if not in similar degree.

At any rate, we think the facts point a moral as to the disastrous reduction in prices induced by reckless competition. The rapid fading of many continental pictures has been a common subject of remark, and an explanation of this may be easily found, we think, in the prices. It is scarcely possible to do justice to the pictures, in relation to any point of unseen care, at prices so inadequate. The downward tendency in prices has been serious in this country; but it has not reached a depth so low as this, and we hope that there is little chance of such a result. That it benefits no one is quite certain. The establishments charging the highest rates and producing the best work are those which, in the dullest commercial times the art has known, have done most work. In the portrait establishment in the metropolis which obtains the highest rate and does work of corresponding excellence there has been a steady increase of business through all the dull years during which so many have suffered from the falling off of business. *Verb. sap. sat.*

MASKS AND FACES.

BY PROTAGORAS.

Part XI.—"Brown" in a Sympathising Mood.

A few evenings since, after business was done, I went out for a stroll. I had had a hard, worrying day's work, and felt tired and weary. I thought I would go to the the theatre, half-price; instead of that I called on "Brown." Fortunately he was at home, last edition of the *Evening Standard* in his hand.

Brown.—"Well, old fellow, how are you? Glad you called. Just finished reading that jolly tussle—Oxford and Harvard boat race. What a splendid set of fellows, both of them! Oxford won, of course—always knew they would—but they had to pull for it, though. 'Gad, the Yankees had some stuff in them; jolly plucky lot; splendid fellows, too, though they did lose. Both sides can't win, can they? Hullo! What's up with you, though? You're not well; something gone wrong, I see. Bath foggy? Films split, and slipt off the plate down the sink? Toning bath won't act? I know it's something about the blessed chemicals that's knocked you over. Here, pull a chair round, and I'll mix you a glass of grog. Light one of these "Henry Clay's." Just dropt on a box of them, put away five years ago; forgot all about them; splendid weeds; can't get such now-a-days. Now, then, make yourself comfortable, and tell us all about it."

"Brown" is really a good-hearted fellow, despite the cynical manner he sometimes adopts, and he never can bear to see me "down."

Protagoras.—"Oh, there's nothing the matter with me, only a head-ache, and fatigue from hard work. Had a lot of disagreeable and unreasonable sitters to-day; would move, and wouldn't look pleasant. Had groups to take with lively babies in them, and the light was dreadfully slow."

Brown.—"Slow? Why it was bright sunshine all day."

Protagoras.—"Yes, lots of sunshine, but very little light in the shade. The sky was a deep blue; not a cloud to be seen. The wind was in the east, and a yellow haze filled the atmosphere; I could see it between the camera and the sitter. I do detest a day like this. Two days ago the sky was overcast with white clouds that gave a brilliant, quick light; I could take negatives almost as quick as I liked; and nobody came. But to-day, because it was sunshine, my rooms were full. I wonder if the public ever will have common sense in relation to photography. There was one fool of a woman came up: 'Oh, Mr. P.' she said, 'I know I made an appointment with you two days ago, but I wouldn't come because it wasn't bright; but I have put off an important engagement to-day to come to you. I do so want to get a good one of baby and my dear little dog. You can't think how prettily they play together at home, and I want you to take them when they are romping on the floor. And I particularly want you to catch the expression of baby's eyes. He has such dear blue eyes. Wasn't it considerate of me to pick such a fine day?' Now what could I say to such an ignorant fool?"

Brown.—"Well, what did you do? Pack her off about her business?"

Protagoras.—"No, I was obliged to waste three plates on the young cub. I might as well try to take an eel as that baby, to say nothing of the dog. She is going to come again on another fine day, and then I shall have to go through it all again."

Brown.—"But, of course, you charge her all the same? Was it your fault the young imp (Brown is a bachelor) would'nt be still?"

Protagoras.—"Charge her, indeed! I might charge her, but she'd take good care she didn't pay. She went away with the idea that *she* was the aggrieved party, not me. I overheard her muttering to the nurse, as they were dressing the child, "What a bore! the stupid man hasn't taken baby after all. Wasted a whole morning, and lost that picnic that I had set my heart on going to. Good mind to try somewhere else next time, that I have. Why can't he take my child like he takes other people's?" &c. I hope she will go somewhere else, and not trouble me any more."

Brown.—"Why didn't you tell her so? I would, in a minute."

Protagoras.—"Ah, Brown! it's a good job for you that you have not to get your living by taking photographic portraits. That sweet temper of yours would get a ruffling with trying to put up with people's vanities and unreasonableness. My next trouble, almost as great, was to take a group of nine persons, including another baby. When they came upstairs they began blowing me up—What a shame it was to keep them waiting so long, especially as they had come such a long way to have it done. Baby had been so good, too; but now it was tired and fractious, poor thing. I suggested it would be much better to omit baby—it would be sure to spoil the group. Oh, dear no! not on any account; family party wouldn't be complete without it. The picture was to be sent to Australia. Omit baby, indeed! 'Well, let baby be put to sleep then.' 'But baby's little eyes wouldn't be seen then. Oh, nonsense! Besides baby was such a dear little thing. No, unless baby could be taken with them, they wouldn't be taken at all.' I told them then that I would not take them with baby, as I was sure it would be a failure."

Brown.—"Bravo! Well, what did you do? Bundle 'em all down stairs?"

Protagoras.—"No; seeing that I was determined, they begged I would try one with baby—just one—and if baby was not good, they'd be done without it. I yielded; and, while preparing a plate in the dark room, I heard the mother confidentially talking to baby: 'Did um say um wouldn't take um pitty photum? Naughty man! Shall have um photum taken, dat he shall, mummy's booty.' The group's arranged; stop in the lens to get them all in focus; beg them all to be perfectly still, and never mind me or what I say or do, as I shall be watching to engage baby's attention. I then put on a great red cap with bells on it, and, with a tambourine, kick up a row to catch baby's eye, my assistant, with cap on lens, ready to expose when the word is given. Bang, bang goes the tambourine; tinkle, tinkle go the bells; jingle, jingle go the cymbals; off goes the lens cap; one—two—when a lout of a boy in the group bursts out with a 'Haw! haw! haw!' and a fool of a girl sniggers 'Hee! hee! hee!' Cap on lens again at least five seconds too soon; and, looking daggers at them while I lay aside my absurdities, I go in the dark room to develop. The negative is not half exposed, and the only one out of the lot that is still is the baby. I go and tell them so, and blow them up. They apologize; say I looked so droll that they couldn't help laughing; won't do it again, that they won't; glad baby was still; they knew baby would be; will I please try them again? I try them again, and go through it all once more. Develop. All quite still *except* the baby, and it is a blotch of white muslin. Dash the baby! Smash the baby!! Jam all the babies!!!"

Brown.—"Well done, old fellow; that's the way to let out. Give it 'em again. Well, what did you say? Didn't you let them have a bit of your mind?"

Protagoras.—"I just did. They were willing enough then to do without baby. I took one more without the young brute, and they were all still enough, and looked as frightened as if I were going to dash and smash them. They were glad to escape, I assure you. Well, that's the way I have been going on all day. The rest that came were not bad as these, but very nearly. Nobody would look pleasant. I expect they caught a little of my own expression; but nearly all of them moved, and had to be taken again for that reason. Oh, 'Brown!' this portrait taking is an awfully trying and exhausting business when things go wrong. Sometimes for days together all goes well, and then there comes a day when there seems a conspiracy among the people to drive you mad. From nine this morning till half-past five I have been hard at it. My dinner lies there untouched, and when I get a chance to taste it my appetite's gone. I sit down in a chair exhausted, and wish I were a dog."

Brown.—"Well, never mind, old chap; perhaps to-morrow things will go as smoothly as they have cut up rough to-day. I know you fellows must have a hard time of it sometimes. It wouldn't agree with me, I know. Here, light another cigar, and let's have a walk in the open air. It will suit you better than this stuffy room."

Protagoras.—"Agreed; lead the way."

ENLARGED PICTURES FROM SMALL NEGATIVES.

BY W. L. NOVERRE.

The process of producing enlarged pictures from small negatives appears to be increasing in popularity, and the question has been often asked, whether a good negative, twelve by ten or ten by eight, can be produced from a small negative. The reply which competent photographers are able to give to this question is apparently not satisfactory, and the convenient plan, so frequently suggested, of producing small negatives in the field, for the purpose of subsequent enlargement, is not likely to supersede the usual method until the results obtained by enlarging are made to equal, in all respects, the negatives obtained directly in the camera. The subject is one well worth the attention of amateur photographers; and if such a process can be perfected, together with an apparatus for taking the small negatives, similar to that lately described in the News, a process will be in the hands of travelling photographers which can leave little to desire. The following remarks have been jotted down in the hope that they may be of use to the uninitiated in this branch of the art.

A few weeks ago, having had an enlarging camera constructed, I placed some of my negatives in it, to see how they looked, and whether the definition was tolerably good. I was struck with the very different appearance of the various negatives as regards sharpness and hardness. When enlarged, some negatives gave a coarse, granular enlargement; others were hard and spotty, as though the original had been under-exposed; others appeared as good as the originals; none of the faults pointed out were perceptible on the paper print from the negative. I now examined the same negatives with a magnifying glass, and the difference was at once apparent. The portrait negatives were the worst; none of them were really sharp under the enlarging ordeal, though some were better than others. This was evidently accounted for by the supposition that the sitters had moved during the exposure; and though the defect was so slight as to be imperceptible to the naked eye on the negative or the paper print taken from it, it was clearly sufficient to interfere with the production of a really perfect enlargement. Parts of the negatives were in many instances sharp, as, for instance, an accessory, which happened to be perfectly in focus; one part of a head would also be better than another, as might be seen in a three-quarter portrait of a lady, by comparing the back hair with the nose and mouth. The accessories, as a rule, would not bear enlargement without losing very much in detail. This was, of course, owing to the short range of focus in a portrait lens. Hence it is evident that in taking a portrait for enlargement the sitter should be arranged in such a way as to insure the utmost steadiness; and, further, to insure this, the lens, the light, and the chemicals should be so adjusted that the shortest exposure practicable may be given. After the negative is fixed, it should be examined with a magnifying glass, to ascertain any imperfections, that another negative may be taken if necessary. If accessories are introduced in the picture, it will be important to arrange them in such a way that they shall be in perfect focus; and to this end, as also to obtain a rapid exposure, the lens employed should be a small one—a carte-de-visite or stereo lens.

An examination of the landscape negatives showed that the imperfections were due to a motion of the trees during exposure, and want of care in some cases to have every object in such perfect focus as to bear magnifying; in some cases there was a general indistinctness, due, apparently, to the camera having moved; and I then found, on experiment, that the tripod-stand used for out-door work was not perfectly rigid, that a gust of wind set it vibrating, and that if the hand was kept on the flap shutter, as is sometimes done during a rapid exposure, a slight motion was communicated to the camera. The indistinctness produced by the motion alluded to was not perceptible to the naked eye on the negative taken direct, or on the paper print; but, on magnifying, the negative was clearly seen to be wanting in sharpness. It was further remarked that reflecting surfaces enlarged badly, especially foliage. In taking such subjects this point must be specially attended to.

I mentioned, at the beginning of this paper, that some of the negatives appeared to lose nothing by enlargement. At first I could not account for this, but I presently discovered that these negatives had all been very rapidly developed; they were architectural subjects, with more or less of foliage; they had been very carefully focussed, for the intricate details of stone carving; and they had been developed with a solution which brought out the image in a few seconds, and that of sufficient density to require no subsequent intensification; in fact, the pictures had flashed out all at once on applying the developer, and this had been purposely managed as the only way to avoid hardness and heavy shadows, the buildings being white and having the sun shining on them strongly. The deposit of silver was evidently exceedingly fine, and depended for its printing density more on the colour of the deposit than on the quantity of silver piled up. Though I have remarked that these negatives bore enlarging without material loss of detail, it is not intended to imply that negatives of printing density are the most suitable for enlargement, because it is well known that a very thin negative is preferable for the purpose; but the observations made are intended to indicate that the degree of fineness in the deposit is considerably modified by the method of development adopted.

It has been suggested, in the Photographic News, that an opalescent film of gelatine and oxide of zinc on a glass plate may be substituted, with advantage, for the ground-glass focussing-screen generally used. It would doubtless be invaluable in focussing small negatives for enlargement, because it is of the first importance to be able to see that every portion of the subject is in perfect focus, and it is very difficult to do this with ease and accuracy on a ground glass.

Recapitulation.

The slightest motion in the object to be taken will result in failure, though such motion might be insufficient to affect an ordinary negative.

Reflecting surfaces (unless intentionally introduced) should be avoided.

The camera and stand must be absolutely rigid, the camera being firmly screwed to the stand.

The prepared plate and focussing-screen must fit absolutely in the same plane, and the focus must be adjusted with unusual care, which will be facilitated by using some material giving a finer surface than ground glass, and by the employment of a focimeter.

A lens should be used giving the greatest possible depth of focus.

The fineness of the deposit will be influenced by the method of development adopted.

SKETCHES OF TRAVEL, FROM A SUN-PAINTER'S PORTFOLIO.

BY STEPHEN THOMPSON.

No. 7.—Venice.

Pleasant was it, on crossing the Lagoon from the mainland, for the second time, late in September, to feel the salt breeze from the Adriatic, and leave the hot plains of Lombardy far behind. Welcome enough was it to reach once more a centre of civilization, where, if the people, as we say, have no home in the English sense of the word, they make the whole city one large home in summer weather.

To catch the best first impression of the singular beauty of Venice, I hold that the traveller should arrive at nightfall, when, as the gondola glides away from the railway terminus, in the beautiful silence of evening, broken only by the star-spangled dip of the gondolier's oar, he will gradually see her stately palaces loom out of the darkness in all their peerless grandeur, with here and there the far-streaming reflection of some bright lamp weaving a chain across the canal. Venice is then beautiful as a dream. He will then understand *why* she has been, in the days of the Great Republic, so apostrophized by poet and troubadour as "the Masque of Italy," "the Adriatic Queen," "the Bride of the Sea." He will then see, in the vague, uncertain light, how fair she is, without seeing anything of the forlorn beauty of her crumbling greatness, as he glides on, creeping into her bosom with no discordant sight or sound to vex him. Unless he is of an extremely unsympathetic temperament, he will then feel something of the charm and mystery of Venice that have made her a marvel and a show for ages; that chained the author of the Stones of Venice here for many long years, until he had mastered her picturesque past; and made Byron select it for his burial-place, though circumstances subsequently decided otherwise.

Welcome, then, once more this strange and wonderful creation of architectural beauty. We know quite well that pathetic swindle, the "Bridge of Sighs," had no existence in the mightiest days of the Republic. We scarcely thank the author of the Stones of Venice for telling us the Venice of modern fiction and drama is a thing comparatively of yesterday. "No prisoner whose name is worth remembering, or whose sorrow deserved sympathy, ever crossed the 'Bridge of Sighs.' No great merchant of Venice ever saw that Rialto under which the traveller now passes with breathless interest. The statue which Byron makes Faliero address as one of his great ancestors was erected to a soldier of fortune a hundred and fifty years after Faliero's death. If Henry Dandolo or Francis Foscari could be summoned from their tombs, and stood each on the deck of his galley, at the entrance of the Grand Canal—that renowned entrance, the painter's favourite subject, the novelist's favourite scene, where the water first narrows by the steps of the church of La Salute—the mighty doges would scarcely recognize the great city. *Their* Venice—more gorgeous a thousandfold—lies hidden in many a grass-grown court and silent pathway and lightless canal, where the slow waves have sapped their foundations for five hundred years, and must soon prevail over them for ever."

Yet Venice has a veritable history, the most picturesque ever possessed by any state—undoubted passages of the brightest glory and grandeur, and of vileness and perfidy—examples of loftiest virtue, and also of enduring hate, and treachery, and darkest crime, when, though not in the exact localities exalted by the fiction of the poet, the secret vengeance of the Republic, in the dark, silent night, plunged its victims into the ungossiping depths of the Grande Canalazzo, and blotted them out for ever from the sum of human existence.

But I must now endeavour to look at Venice through photographic spectacles; and next to its architecture and gondolas and gondoliers, perhaps photography is more conspicuous than anything else. The sale of Venetian photographs is enormous, and the prices so marvellously low that it has puzzled English photographers beyond measure. The secret shall be here unfolded—the whole root of the matter—

the *modus operandi*—and then those who run may read that the price, though still very low, is not so utterly unaccountable after all.

The whole of the best shops are located in the great square of St. Mark. Some half-dozen of them are devoted entirely to the sale of Venetian photographs. Two of them—"Naya's" and "Carlo Ponti's"—are as handsome establishments as can be found anywhere in London or Paris. The price of the photographs most extensively sold is one and a half lire, or about fourteen pence, the size being fourteen inches by ten inches. This is startling on the face of it. Signor Ponti (who was the earliest in the field) told me he once got twenty francs for them. One rival after another sprung up and (in the figurative language of competition) "cut each other's throats," until the prices reached the lowest maximum of remunerative profit. That Ponti and Naya are making a profitable return at these prices is the point to be explained. In every case the producer is also the retail seller—comes into direct contact with the public; this, at one blow, knocks off half the price. The English photographer rarely or never gets half the price his productions cost the public. There are slides here, equal to any of the best by our own photographers, selling at sixpence each, or five francs per dozen. This is precisely what the photographer usually gets for his shilling slide. They go in to the publisher at five shillings or six shillings per dozen, who, in his turn, sells them to the retailer at, perhaps, seven shillings and sixpence or eight shillings, and they finally reach the public at the usual one shilling.

The cost of keeping shop does not affect the question as it would in England. Labour and assistance are very cheap, rent also. Signor Ponti pays for a very handsome shop, in the best part of the Piazza, close to Florian's celebrated café, about six francs, or five shillings per day. The price of the larger photographs is more unaccountable than the small ones. Silver and gold are of pretty much the same value all the world over, nor is the paper much less in price. The mounting of them is more inexpensive than in England. Tinted mounts are never used. A common piece of white cardboard, little more than an inch or two larger than the photograph, is that used. A narrow margin is of consequence when one is dealing with a sum of fourteen pence; and, moreover, travellers prefer them, so that they may pack away in trunks or portmanteaux. Another important feature is, that negatives cost them next to nothing. No travelling expenses—nothing but glass and chemicals. The subjects are all close by—almost at their back door; seven-eighths of them are within three hundred or four hundred yards. When a negative is broken or worn, they simply send out an assistant, the first fine day, to expose a plate. Thus it really becomes a question of "*printing prices*" from *stock subjects* in *large quantities*. I say large quantities, for the sale is *very* large, and, what is of still more consequence, not intermittent. All the year round, year after year, with but little intermission during the short Venetian winter, come shoals of tourists—Americans most of all. America absorbs at least two-thirds of all produced. For nearly three months I have never seen Ponti's shop uncrowded with people buying photographs by the dozen, or two or three dozen. Single photographs are very rarely sold. Americans commonly leave it until the last moment of "packing up," and then come and buy a whole round of one or two hundred subjects.

In the interiors of the Ducal Palace dry plates only are allowed to be exposed. The photographers have solid operating-room stands of one-half the altitude of the rooms, and expose plates all day—uncover the lens, and leave them for hours untended. Of course, on such slow plates, passing figures make no impression. I have never seen the Hall of the Great Council, the Hall of the Council of Ten, or the Room of the Three Heads of the Council of Ten, without a camera in the corner and a picture going on.

Portraiture is less represented in Venice, and very few specimens are shown. It is quite eclipsed, even in thought, by the mighty monuments of past greatness.

THE EMPLOYMENT OF IODINE WATER IN PHOTOGRAPHY.

BY A. DAVANNE.*

The employment of a solution of iodine in alcohol, denominated tincture of iodine, is attended with many inconveniences, due, in great measure, to the solvent, alcohol, which, besides being of a costly nature, is frequently unadaptable to purposes for which iodine might be advantageously used. An aqueous solution of iodine would be preferable, but, as the element is exceedingly difficult of solution in water (seven litres of water being necessary to dissolve one gramme of iodine), the result is so dilute as to be incapable of exerting any appreciable reaction. The difficulty of dissolving iodine in water is, however, easily obviated by the previous addition to the latter of iodide of potassium, the solution which I prefer to use being thus compounded :—

Water	1 litre
Iodide of potassium	20 grammes
Iodine	15 ,,

Prepared in this manner the solution is in a concentrated form, and generally requires to be diluted with a larger or smaller quantity of water before being used.

If we now recapitulate, one by one, the different operations in photography, we shall see that a solution of this kind is among the most useful of our photographic requisites, serving for any of the following purposes :—

1. For cleaning glass plates.
2. For the preparation of the silver bath.
3. For cleaning dishes and baths containing silver deposits.
4. For intensifying weak negatives.
5. For clearing dull negatives.
6. For weakening over-printed positives.
7. For removing silver stains from the skin.

In the first place, as regards the cleaning of glass plates, we are generally recommended to employ tripoli or rotten earth, mixed either with water acidulated with nitric acid, or with old collodion, or acidified collodion, or collodion containing iodine. These collodions owe their action mainly to the free iodine they contain, and for this reason I employ, in their stead, a mixture half of iodine water of the above strength, and half of ordinary water. The tripoli or earth moistened with this liquid is spread over both sides of the plate, and the latter rubbed in every direction by means of a pad, the tripoli being allowed to become perfectly dry before removal. The iodine is thus able to act upon the minute particles of silver on the surface of the plate, while the earth, in drying, absorbs all trace of grease, so that, on cleaning off the film, a plate is obtained free from spots or contamination of any description. Every trace of old pictures, as also invisible deposits of silver, are thus completely removed.

When a new dipping-bath is prepared, it is a general custom to add a small quantity of some iodide or some iodized collodion, in order that the nitrate of silver solution may become saturated with iodide of silver, and shall not absorb the same at the expense of the first plates dipped into it. It is often the case, likewise, that a slight acidulation of the bath is necessary, so that the plates produced may be free from all tendency to fogging. To obtain these two results it is necessary merely to add to a new bath several drops of iodine water, by which means not only is iodide of silver produced for saturating the bath, but the free iodine, liberating a small quantity of nitric acid, ensures, at the same time, sufficient acidulation in the bath.

When the sensitizing bath has been used for any lengthened period, deposits of metallic silver are sometimes produced at the angles of the utensil, from which particles become detached from time to time, causing the formation of spots; if iodine water is copiously poured into the bath, the metallic silver is transformed into iodide, and the cause of the spots thus eliminated.

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* Read before the French Photographic Society.

When a *cliche* is taken, developed, and fixed, it does not, sometimes, possess the required amount of vigour. M. Cassan, and afterwards M. Piard, have recommended the application of the tincture of iodine until the film has been completely transformed into iodide of silver, and then treatment with bichloride of mercury to impart greater intensity. In repeating these operations, the efficacy of which was denied by General Mongin, my experiments led me to believe that iodine water was preferable for the purpose, but that the action of the same should not be pushed so far as to convert the image entirely into iodide of silver. The effect obtained without having resort to bichloride of mercury is better. It suffices to pour uniformly over the *cliché* a quantity of iodine water, prepared as above, and diluted with water to about two-thirds of its bulk, allowing the action of the liquid to continue slowly, and inclining the glass the while gently up and down. The general tone of the picture is observed to change, and the maximum density is obtained when the plate has a brownish tint by transparence; by allowing the action to proceed further, the film loses vigour instead of gaining it. The surface of the *cliche*, viewed by reflection, assumes at this moment a light yellowish tone, due to the formation of iodide of silver.

The plate is washed, but not fixed. The action exerted by the iodine is the transformation of a more or less quantity of the film into iodide of silver, the yellow colour of which modifies the tint of the film, and renders it more impervious to chemical rays. We ought to state, however, that negatives intensified in this manner, as also those treated with bichloride of mercury, are affected by light, and become gradually more and more opaque. The cause of this continued action has not yet been satisfactorily accounted for, but it may be due either to the presence of a small quantity of the iodine still remaining in the film, or to the formation of a modified description of iodide of silver. At the same time, the change is produced but very gradually, and no fears need be entertained, therefore, except in the case of negatives destined to remain exposed to daylight, and from which a large number of copies are required to be printed. It is probable that a few experiments undertaken in this direction would result in the working out of a perfect method of fixing. The latter operation must not, however, be accomplished by means of hyposulphite of soda, as this reagent would dissolve the whole of the iodide of silver formed, and not only nullifiy the effect produced, but likewise render the negative less vigorous than it was at first.

Fixing with hyposulphite of soda, although injurious in the foregoing instance, is, however, indispensable when a fogged negative is under treatment. Many a time I have been enabled to render dull and heavy negatives, obtained, through unskilful development, by the Taupenot process, capable of furnishing very fair proofs by proceeding in the following manner:—

The negatives, if they have been fixed and varnished (I employ shellac varnish), are first unvarnished by immersion in a bath of alcohol, and afterwards well washed in fresh alcohol and water; they are then covered with iodine water, somewhat diluted, which is allowed to flow uniformly over the surface, until the latter assumes a yellowish tone by reason of the formation of iodide of silver. The surface is then washed with water, and fixed with hyposulphite, which removes the film of iodide, and thus clarifies the negative. The latter is carefully washed and examined, and if the film has not been sufficiently cleared, the action of the iodine is repeated, as also the operations of washing and fixing, until the film is rendered transparent throughout. Density may always be restored, if the action has been pushed too far, by applying a solution of gallic or pyrogallic acid, or the two mixed together, supplemented by a good proportion of acetic acid, and a little nitrate of silver. These operations naturally demand care, but they will generally be found very successful.

Iodine water may also be employed to good purpose in correcting over-printed paper proofs, and may, I think, replace, without danger, the deleterious compounds employed by M. Humbert de Molard under the name *cyanure iodeux*. When a print is too vigorous, either before or after it has been fixed and washed, it should be immersed for a few moments in very dilute iodine water; the surface of the paper becomes by this operation of a bluish tone, due to the formation of iodide of starch, and it is then placed in the hyposulphite bath, which re-invests it with suitable density, and, at the same time, restores it to an agreeable tone. The future keeping qualities of the print are not, in my opinion, injured by this method of treatment.

Arrived at this point, it may be conceived that the rôle played by iodine water in photography is at end. This, however, is not the case, for it is still a valuable aid to the toilet. If the operator has no visible stains on the hands, he will still do well to moisten them with the iodine solution (diluted with an equal quantity of water), and, after washing, to immerse them in hyposulphite of soda; thus the formation of any latent spots or stains which might become developed by light is prevented. If the hands are marked with nitrate of silver, the iodine water must be used at its full strength, and if the stains result from the use of gallic or pyrogallic acid, they are far better removed in this way than by cyanide of potassium. The iodine water, in fact, acts as a bleaching agent, in the same manner as chlorine, and is more capable than cyanide of destroying the brown colouring matter which results from the action of nitrate of silver upon gallic and pyrogallic reducing agents. Sometimes very dark spots will at first resist the action of iodine water, but after a few hours they will be found to disappear of themselves.

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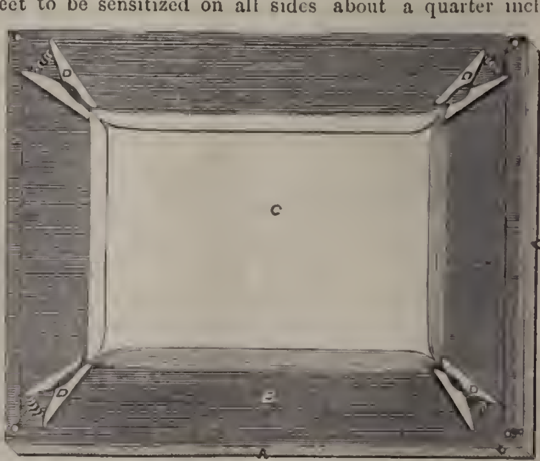
APPARATUS FOR SENSITIZING PAPER.

The *Philadelphia Photographer* describes an apparatus recently patented in the United States by Mr. W. S. Lukenbach. It says:—

The apparatus is simply this: A light wooden frame, a little larger than a whole sheet of paper, is made, over which is stretched a piece of black muslin or cloth, slightly slack in the centre. At each corner of the frame elastic cords are fastened, and with each cord is connected a clothes-clip. This is the whole apparatus.

To use it, proceed as follows: Fold up the edge of the sheet to be sensitized on all sides about a quarter inch, making, as it were, a shallow dish; place it upon the black cloth; pinch each corner with a clothes clip, stretching it by the gum cords until it is tight enough. Now it will be seen you have a shallow dish ready to receive solution. Take three and a-half ounces of plain silver solution in a graduate, and pour it gradually in the centre of the sheet.



Move the frame gently from side to side, causing the solution to flow over the paper three or four times; after which you detach three of the clothes-pins, leaving the one on the opposite left-hand corner fast; the gum cord of this pin must be made sufficient in length to allow the paper to be moved to the right corner of the frame, the slack of the cord being taken up, while silvering, by placing over one or two hooks in the side of frame A, placed there for this purpose; raise the frame gently on the left, allowing the solution to run off at the right-hand corner into your glass funnel; filter into your stock-bottle, and repeat for each sheet of paper you sensitize; drain the paper, and hang up in a dark room; when perfectly dry, it is ready to print. Any portion of a sheet can be sensitized on this frame by dispensing with the gum cords, which you will not want after a few trials and become accustomed to its use. A fifty-grain solution is recommended. This is the whole story. It is backed up by sundry claims, which we think much experience cannot justify, namely: "Less time and silver are required; paper dries more quickly, and fuming is unnecessary; paper is more sensitized, and requires less time to print; gives the picture a finish like enamel; less gold is required to tone; any desired tone is more readily obtained; pictures are superior in every respect, made in less time, and at less expense."

The only advantage we can see in this apparatus is, that it makes the old process easier where one desires to sensitize a whole sheet in a hurry, and has not a large pan at hand. For smaller work the common method is best.

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REPRODUCING NEGATIVES.

BY DR. VOGEL.

A few months ago I reported to you about the chloride of silver collodion, and its employment in the reproduction of negatives. Since then the use of this collodion has largely increased, and Obernetter, in Munich, manufactures it on a large scale, and I myself have lately made experiments which promise much.

The process is very simple. A clear plate of glass is covered with albumen made from the whites of four eggs and two ounces of distilled water; the whites are beaten to a froth, and the clear settlement is decanted after three hours of rest.

The covering with albumen gives no trouble. The liquid is spread even with a glass rod, the excess poured off, and the plate is left to dry. These plates will keep for months. They are subsequently covered with chloride of silver collodion, dried, and placed with the negatives in a copying frame, and exposed in the usual manner, only using the precaution of covering the back of the collodion plate with a dark cloth. The picture appears in a peculiar manner: at first the negative retouched appears very prominent, but disappears again. It is necessary to over-print considerably, as the picture fades very much in the toning and fusing processes. We obtain in this way a really very fine positive transparency. The toning can be done with any of the well-known sulphocyanide toning baths. If it is desired to take a negative from this transparency, then it will be better not to tone at all, but to fix at once. An untoned picture will have a brownish colour, which is less actinic than a toned one. After fixing, the plate is washed and dried. Varnishing is not absolutely necessary, as the plates keep well without it.

The negative is obtained from the positive by a simple repetition of the above described process, and if the plates employed have had flat and even surfaces, the copies will be nearly as sharp as the originals.

The beginner in this process will get a picture in which he will find the proportion between light and shade somewhat different from the original. This is caused by not timing the exposure correctly, either in taking the first positive or the second negative; and to accomplish this correctly requires some experience. I have lately found a very simple way of strengthening chloride of silver plates by means of iodide of mercury.

One part of chloride of mercury is dissolved in forty parts of water, and a solution of iodide of potassium of the strength of 1·10 is added, until the red precipitate is re-dissolved.

With this solution the fixed and washed plate is frequently flowed, and will take a greenish colour, which on washing will turn yellowish brown.

Mr. Adolph Ost, of Vienna, has recently published a very good formula for the preparation of chloride of silver collodion, which I give below:—

Take of—

Collodion of cotton	2 parts
Alcohol	50 ,,
Ether...	50 ,,

In a pound of this collodion seventy-five grains of crystallized chloride of magnesium are dissolved by constant shaking: add to this three-eighths of an ounce of crystallized nitrate of silver dissolved, half an ounce of water; shake for four minutes; and finally add one drachm of citric acid dissolved in two drachms of water, and two drachms of alcohol. The collodion is left to settle for two days, when it is ready for decantation. It will keep for a long time.

Besides the above, Ost uses the following collodion:—

Collodion	1¼ pounds
Chloride of magnesium ...	60 grains
Nitrate of silver dissolved in water as above	½ ounce
Citric acid	1 drachm

He coats his albuminized plates by first flowing them with collodion No. 1, and afterwards with No. 2.

He also makes enlargements by this process. He first makes a positive, and then takes with the camera in the ordinary way an enlarged negative.—*Philadelphia Photographer.*

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PHOTOGRAPHIC REGISTRATION OF THE BEATINGS OF THE HEART AND PULSE.

At the July meeting of the French Photographic Society, Dr. Ozanam communicated the details of an instrument which he has recently invented for registering, and printing upon paper or glass, a curved line indicative of the movements brought about by the pulsations of the heart. The learned doctor illustrated his remarks by demonstrating before the members the actual working of the instrument. Four conditions were necessary to be fulfilled before the construction of his apparatus could be determined upon.

1. To reproduce the artery in an artificial manner, by means of a tube or vessel, the transparent sides of which would allow of the passage of light.

2. To imitate the blood by a liquid column, the level of which could be influenced at every instant by the pulsation of the blood, and the nature of which was such that, in rising or falling in the tube, it would not moisten or discolour the sides thereof nor interfere with their transparency.

3. To register the undulating line represented by the liquid surface by means of a running apparatus furnished with a sheet of paper, or glass, capable of receiving the impression of the light when the level of the liquid is depressed, and allows the rays to enter.

4. To enclose the whole of the arrangements in a suitable camera.

These four conditions were fulfilled in the apparatus shown by Dr. Ozanam, which had been constructed under the doctor's directions by M. Breguet, and which measured but thirty-five centimetres in length, twelve in height, and four in thickness. About the middle of the instrument a running tube covers and uncovers at will a slit or aperture in the apparatus, of very narrow dimensions, and it is along this slit that the transparent artificial artery is placed, composed of a glass tube, of one millimetre diameter, containing mercury, to represent blood. At the extremity of this tube is a small pyramidical reservoir, the sides of which are of very thin vulcanized rubber, so that the mercury is free to move upon the slightest pulsation of the heart or artery against which the reservoir rests. The artificial artery thus constructed is so exquisitely sensitive that it reproduces the slightest movement of the blood. Instead of vulcanized india-rubber, gold-beater's skin or moistened parchment may be used for the purpose; but Dr. Ozanam prefers to employ rubber, on account of its very supple character and its non-liability to alter by a change of temperature.

The mercurial tube is, in fact, a description of barometer, registering all the variations in the ebb and flow of the blood, in the same way as the ordinary barometer registers the variations of the atmosphere; it may be of almost any desirable shape, not more than ten centimetres long, and either straight or bent at an angle, according to the manner in which it is most convenient to be used.

The running apparatus employed is one of very perfect construction, and registers only during the middle of its course, and not when first set in motion or when about to be stopped, as it is the nature of an instrument of this kind to be always too rapid at the commencement of its course, and too tardy at the end. The construction of the apparatus may be varied by composing it of two cylinders, of which one unrolls and the other catches up the photographic band while the mercurial column oscillates between the two cylinders; an arrangement of this kind would be smaller and more portable, but it would not admit of the employment of glass, but only of paper, which is scarcely sufficiently sensitive for the purpose.

The statements made by the doctor in regard to the results obtainable and the value thereof are really surprising. He states that the photographic film runs at the rate of one centimetre (0·01 of a metre) per second; the image produced thereon, after having been properly fixed, may without difficulty be enlarged two, four, or ten diameters, and a single pulsation would then occupy one-tenth (0·10) of a metre. By this means it is possible, therefore, to multiply *time* by *space*, so that the eye may easily perceive any modifications which have taken place during the one-hundredth part of a pulsation, and during the one-hundredth part of a second, since such modification, or period of time, is, in the enlargement, represented by the thousandth (0·001) of a metre; thus a result is obtained which would satisfy the most exacting of scientific investigators.

Dr. Ozanam, however, goes further, and states that by using a microscope capable of enlarging a thousand times, and employing electric or even magnesium light, an enlarged photograph might be produced, capable of demonstrating what passes during the millionth part of a pulsation in the millionth of a second.

As to the value of the results of the instrument, there is every reason to be very sanguine. Without amplifying in any way the registers obtained, it has been possible to study by their means one of the particular characteristics of the pulse, known as dicrotism, or the double beat, which has recently been declared by Dr. Maurey to be the normal condition of the pulse. This assertion of Dr. Maurey has been verified by Dr. Ozanam's instrument, which, however, proves that the pulsation is not only double in its action, but triple, and even quadruple; and the column, after bounding with one leap to the top of the scale, descends again to its original level by three or four successive falls. Moreover, natural dicrotism varies in force and degree, the full of the pulse sometimes taking place in successive horizontal lines, and sometimes in ascendant lines, where the pulse reascends two or three times before falling entirely. Thus four descriptions of dicrotism have been discovered, viz., horizontal, ascendant, simple, and multiple.

From this we may conclude, says Dr. Ozanam, that it will in future be the duty of photography to write down a statement of the sick man's pulse, and furnish a diagnosis of his malady; for a study of the results of this instrument on various patients will yield a dictionary of a language capable of being understood by any well qualified physician.

Recent Patents.

KEEPING PRINTS IN MOTION WHILST TONING AND FIXING.

BY. H. L. D. MARSDEN.

The following invention of a rocking apparatus for keeping prints in motion whilst toning and fixing received provisional protection only:—

My invention consists of improved machinery or apparatus for toning, fixing, and washing photographic prints, and in part is also useful for other purposes where similar rocking motion arrangements to those hereafter described are required.

The apparatus consists of one or more receptacles or vessels for containing the toning or fixing solutions, or water, or other liquid in which the photographic prints or other articles to be prepared are immersed, and so arranged that by means of said machinery or apparatus a mechanical rocking motion can be produced and applied to the washing photographic prints and other fragile articles, as also in the operations of toning and of fixing photographic prints, and for other purposes for which it is desirable to use a rocking motion with or without change of water or other liquid in the manner described.

In the said machinery or apparatus, the receptacles before mentioned are so placed as to be rocked by turning on its axis a rod or bar, with or without joints, fitted with one or more bends, pins, or other projections, or with crank or cranks and connecting rod or rods, fixed or moveable, which may be turned or put in motion either by the hand and foot, or any other mechanical power. Other arrangements of rocking mechanism may, however, be adopted in lieu of the above, although those above described I have hitherto considered preferable. The receptacles may be filled with water or any other liquid to the required height, and emptied either by means of jointed tubes of india-rubber connected with an aperture or apertures in each receptacle, or by tubes of other suitable material with or without joints, or in any other convenient manner.

In the operation of toning and of fixing photographic prints the same motion is produced by the same means, with the intention of thoroughly separating the prints, and keeping them in motion while immersed in the toning and fixing solution.

PHOTOGRAPHING BY ARTIFICIAL LIGHT.

BY G. KENDALL PROCTOR.

The mode of employing artificial light for portraiture, introduced in the United States by Mr. Proctor, and described some months ago in our pages, has been patented in this country. We extract the following particulars from the specification:—

The said invention consists chiefly in so constructing such rooms or apartments that the rays of light from a lamp or burner placed therein will be reflected and concentrated upon the person or object to be photographed. The interior of the said room or apartment is curved above and at the front and sides of the point whereon the light is to be concentrated, and a magnesium lamp or burner is arranged in such a position that its light will be reflected upon the said point. An opening is made in the curved end of the room for the camera, and a suitable background is placed at the other end. A lamp of any ordinary kind may be used for focussing.

I prefer to construct my improved photographing room by joining together a series of curved bars of wood or other suitable material, which bars are secured at the bottom upon a horse-shoe shaped piece, forming a frame which may be advantageously made about seven feet high, seven feet long, and five feet wide; these dimensions, however, may be varied. The frame is lined with cloth, paper, or other suitable material which is white on its inner surface; around the exterior of this lining or covering, but inside the frame and near the bottom thereof, a cord is extended, whereby the lower part of the ining may be drawn in, to diminish the space to be illuminated, and to reflect the light upward. An aperture is formed through the lining near the top of the room, through which to light the magnesium burner, which is provided with clockwork or other suitable feeding magnosium, and a screen of ground glass or other suitable material is placed in front of the burner, and connected with a rod extending through the room, by which rod the said glass may be raised or lowered. This glass is used to modify the effect of the light, and thereby produce the desired shades in the picture. An opening is made through the lining for the smoke from the burner to escape through. The opening for the camera is formed below the aperture for igniting the burner in the most convenient position to allow the instrument to be properly adjusted. The background is so arranged that it may be removed or opened to admit a person into the room, and then adjusted to close the room. I prefer to employ a kerosene lamp for focussing, the said lamp being supported on a bracket provided with a reflector. After obtaining the proper focus, the said bracket is turned partially around, and brings a shade before the lamp. The magnesium burner is then lighted, and the picture taken.

By this invention the means are provided whereby persons whose only leisure time is the evening can obtain portraits without neglecting their business. The apparatus can be used without difficulty, and will render photographic artists independent of the weather and seasons in the practice of their profession. Amateurs of photography can also at a very small cost practise the art without neglecting their other occupations.

The said invention is applicable to the taking of portraits (which will be found in all respects equal to those taken by natural or solar light), and to the copying of pictures, and printing.

Having thus fully described the said invention as communicated to me by my foreign correspondent, and shown how the same may be conveniently and advantageously carried into practice, I claim,—

First. For photographing purposes an apartment or room having its interior of such a form as to reflect and concentrate the rays from a lamp or burner upon the person or object to be photographed, substantially as set forth.

Second. The opening in the room or apartment for the purpose of allowing the camera outside of the room to be properly adjusted with regard to the person or object to be photographed within the room or apartment, substantially as set forth.

Third. The employment of magnesium for illuminating purposes in connection with a room or apartment constructed in the manner or form substantially as herein set forth.

EXHIBITING CARD PORTRAITS.

BY T. P. LUCAS AND G. H. J. HOLT.

The following invention of a "photoscope" was only provisionally specified.

The nature of the invention for "An Improved Method of Exhibiting Cartes-de-Visite or other Portraits or Pictures," is described as follows:—

The cartes-de-visite, portraits or pictures, are first inserted in pieces of cardboard having spaces cut out to receive them. On the top of these cards are fixed loops, composed of wire or other material, through which a rod is inserted. The ends of this rod are fixed into two separate triangular pieces of wood, cardboard, or other material, the whole being closed in, so as to form a box, with glass inserted in the front and back, through which the pictures are viewed. When exhibiting the pictures, all that is necessary is to open the triangular box, and turn the cards over, they revolving on the rod before mentioned. This article will be called a photoscope.

Correspondence.

ADHESIVE MOUNTS.

Dear Sir,—Your objection is the greatest recommendation to my plan—that is, if it is my plan, for I fully expect some one has thought of it before. However, I will venture to explain my views, and then the other gentleman, whoever he may be, will, no doubt, rush forward, and set us right If the mount—no matter what size, or what margin—is covered with adhesive matter only where the picture is to lie, it will ensure uniformity in mounting, serve as a guide, and there will be no fear of smears on the margin from excess of material used in mounting pressing out from between the mount and the picture.—I am, sir, yours respectfully,

Western Road, Brighton, Sept. 15th, 1869. B. W.

[We fear that our correspondent's suggestion will require further consideration and suggestion before it can be worked out satisfactorily. In the first place, it would not be easy to apply adhesive material to one portion of a mount, leaving it with true edges. In the next place, it would involve necessity for extreme accuracy of size in cutting prints, and would risk smearing, if the print were less than the adhesive portion, and imperfect sticking at the edges if it were in any degree larger. Will our correspondent try the plan, and report?—Ed.]

ADIACTINIC GLASS FOR THE DARK ROOM.

Sir,—Referring to your notice of Professor Morren's experiments on light, I may briefly state that I have used a diaphragm or screen such as you describe for some years I have tested various adiactinic solutions, but find that the yellow chromate of potash, or the bisulphate of quinine, answers the purpose better than any I have yet tried, from the great quantity of nonactinic light which they transmit. I use the solutions confined between plates of glass. I may also state, as a proof of their efficiency, that I have a cover for the lens, made with plate glass, confining a stratum of either of the above solutions. I use this cover so that in out-of-door practice I can focus at once upon the sensitized plate in the camera. I have constructed a camera for field purposes, whereby, taking advantage of the properties of the above solutions contained between glass plates, I can sensitize and develop a plate in the open air with greater ease and certainty than by the ordinary method in the dark room.

Apropos to the above, from my constant perusal of your valuable periodical, I see that a Mr. Whiting has patented or registered a camera, in which he develops his plates in a dipping bath. It must be well known to you, and to everyone acquainted with photographic literature, that this plan has often been tried, and was patented by Mr. Newton sixteen or seventeen years ago. I also arranged a camera on this principle which was very compact and convenient, but I found that developing in a dipping bath had some serious drawbacks, not compensated by its advantages, and I abandoned it in favour of one which is equally as convenient, and far more efficient.—I am, sir, yours truly,

Middlesbro'-on-Tees, Sept. 24th, 1869. B. Ford.

[Mr. Whiting's camera is not patented. The design of a portion of it is registered.—Ed.]

THE NEW DEVELOPER FOR HOT CLIMATES.—McLACHLAN'S PROCESS, ETC.

Dear Sir,—In my last I sent a formula of a new developer, to which I wish to add that since I received a new sample of sulphate of iron, which I found very inferior; the crystals were a light green colour given to a white encrustation (efflorescence), instead of oxidizing or rusting. I substituted the double sulphate of iron and ammonium, which answers well; and I would recommend the same to those who may only have this faulty sample of sulphate in hand. It is inferior with any developer, but seems to affect this new one even more than those in ordinary use.

In continuation of my last letter I will now refer or relate a few curious experiences on sensitiveness of collodions, and state, in as few words as possible, my ideas as derived from experience as well as from experimenting.

When Mr. Lachlan's paper on the bath was published in the NEWS, I prepared a bath in strict accordance to his directions, and used also Mawson's full, ripe, and red, neutralized with carbonate potash in water. This collodion proved itself so extraordinary sensitive that I could work about three times as quick as I could before. I used, however, a zinc developer (another form than the one last sent). This appeared glorious, and I was quite astonished at the results; but, on using another bottle of the same collodion, the exposures were at once as long again as they were before. It was neither light, bath, nor developer, for the old sample tried against the new bottle proved this most conclusively. There was a puzzle, and one that occupied my mind day and night. What can have been the cause of the extraordinary sensitiveness of the collodion, giving, at the same time, much finer results than the new bottle, which was, by-the-bye, received at the same time? Often and long did I ask these questions, and many were the experiments in order to find the lost condition again. At last, as a final trial, I examined a number of films in various—or, rather, all conceivable—stages of preparation under the microscope, and there I found the solution at last—at least, it helped me to trace the cause of sensitiveness and clearness in such a degree that it led me on to certainty, provided that no other condition in the bath, &c., interfered. It was a most troublesome problem, which is even now, with new samples of collodion, often refractory, but succumbs also as soon as the cause of slowness is removed. I found that the most sensitive collodion gives the most spongy or porous film. I here mean a film on which the picture is not merely on the film, for most good collodions will, with a short exposure, produce a picture, but it will in most cases be built upon the film, whereas I mean a picture in and through the film.

Clean working, great sensitiveness, softness of image, texture in the pictures, and other good qualities depend chiefly on the state of porosity of collodion. Smears deposited between the film and the glass, hardness, insensitiveness, and many other evils depend on the density or want of porosity in the collodion film; this, of course, presupposes that the bath is good, as well as the light, developer, &c. To experiment with films under the microscope in all stages of preparation with good working collodions as well as with defective working samples, I can recommend as very instructive, and was to me more useful than all the published wisdom which I read, and generally misunderstand; but when told that bromo-iodized collodion should be ripe, I understood that one alone was required, and so on.

How I bring the collodion in the state of sponginess and sensitiveness I will not at present state, because I think that if the principle is considered sound, our scientific friends and collodion makers also will find and point out much better means to obtain the subject than those which I have devised; but, if not, I will send my somewhat clumsy method, one of which is to have a pint of unripe collodion violently shaken for at least twenty-four hours. This may be laughed at, but it nevertheless produces a great change in the structure of the film obtained from it.

In the picture enclosed in my last, I carried the principle of rendering collodion spongy or porous (the picture being an experimental one) just a little too far. With a magnifying glass a certain amount of grain or coarseness of film can be seen, which is the result of too spongy a film, but it is not under-exposed. There is no want of detail, no want of texture nor modelling, but wants a little more contrast, which a denser film would have given with the same light. The exposure was less than a second, and the light by no means strong in the glass room. A denser film would have required a longer exposure, just in proportion to the degree of density. In this I enclose an instantaneous picture, not quite sharp, I think, on account of vibration in the camera. It was done on a hazy day, the sun out, but looked quite dimly through a yellow mist. Done with No. 2B, and stop No. 2, as fast as I could open and shut Dallmeyer's flap-shutter. It is developed in a bath that deprives zinc of control. It is not intensified, and might thereby have been injured, but shows that a porous film will give all the details possible with the shortest exposure. I develop with the new developer, else the exposure is a little longer, for the new developer has greater penetrating power than any other in use. More in my next on the same subject.—Your

EASTERN CORRESPONDENT.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual meeting of the Association was held on Tuesday evening, the 31st ult., at the Free Public Library, the President, Mr. O. R. GREENE, in the chair.

The minutes of the previous meeting, and also the resignation of Mr. C. S. Dean, were read and confirmed.

Messrs. ROBERTS and DOD gave an account of the late excursion to Llangollen. Mr. Dod showed some 10 by 8 views taken on the excursion. They were on collodio-bromide plates, mostly with a tannin preservative; two of the best, however, were collodio-bromide, without any subsequent preservative, but containing two grains of resin to one and a-half ounce of collodion.

The PRESIDENT remarked that several years ago he had recommended the adoption of this plan, but had not been able to experiment.

In the discussion which ensued, Mr. WILSON recommended the addition of a few drops of glycerine, also, to the collodion, as tending to keep the film more open and non-repellent to the developer. It was afterwards elicited that the resin plates could not be depended upon for keeping, and it was decided that further experiments should be made.

The presentation print, and also the one offered by Messrs. Robinson and Cherrill for the best instantaneous picture, were exhibited, and were much admired.

The paper promised for the evening was not forthcoming, and this led Mr. WILSON to remark upon the laxity of members in the matter of papers.

The subject of another excursion was also mooted, but no decision being arrived at, the matter was left to a sub-committee.

The question-box contained an inquiry as to whether a large proportion of cotton in the collodion tended to produce density, and, in the discussion which followed, the general opinion was that the haloid salts and age of the collodion had chiefly to do with the density of the resulting picture.

Mr. MAWDSLEY thought that with a large proportion of pyroxyline less density resulted, unless the proportion of salts were increased.

Mr. WILSON complained that lately all his plates prepared with an albumen substratum had been subject to blistering, and he suggested gelatine, with or without albumen previously applied.

Mr. PHIPPS spoke in the same strain. He found that gum in the tannin increased the evil.

Mr. HENDERSON, though using an albumen substratum and gum with the tannin, said that he never met with blisters, and considered the difference in temperature and hygrometrical conditions under which the preparation and development of the plates took place might influence their formation.

Mr. WILSON explained that the albumen was thoroughly dried by heat before the collodion was applied. It was thought that subsequent dampness might be the cause, but no solution of the difficulty was propounded.

Mr. MURRAY exhibited views taken at Kendal and Hawarden during excursions of the Liverpool Field Naturalists' Society. Some charming stereo transparencies were shown by Mr. Roberts, as were also prints by Messrs. Greene, Wilson, Hayes, and Dod.

Mr. WATLING exhibited some excellent prints on "Durand's sensitized paper," but complained of the time taken in toning.

Mr. GREENE said the latter fault did not now exist. He liked the paper, found it to keep, and to render the half-tones well.

The meeting was shortly afterwards adjourned.

Talk in the Studio.

Beer instead of Gum.—Mr. Blanchard recently called our attention to the fact that stale beer used instead of dilute gum water to films which showed a tendency to split in drying, answered the purpose of preserving the film, without the risk of causing dull spots on varnishing, which with gum sometimes occurs.

Surface Markings on Negatives.—A correspondent of a contemporary describing a case of matt silver surface markings on negatives which all the usual remedies failed to remove, finally got rid of them by using a fresh sample of acetic. Impure acetic acid sometimes contains a reducing agent, causing fog, and sometimes it appears producing stains reduced silver.

Behaviour of the Salts of Silver towards Iodine.—The *Chemical News*, in an abstract of a paper by M. Weltzein, says:—After referring to experiments made by himself in 1854 and 1860 on this subject, the author states:—(1) When iodine acts upon the nitrate of silver, no free oxygen is given off; (2) that, not the anhydride of nitric acid, but hyponitric acid, is obtained, the reaction being represented by—

$$3AgNO_3 + 3I = 3NO_2 + AgIO_3 + 2AgI.$$

The author further says that he hoped to obtain, by the action of iodine upon the acetate and benzoate of silver, the respective anhydrous acids, but failed; and next winds up his paper with a long series of formulæ, not deduced from his own experiments, but made up from theoretical reasoning. The formulæ are too complicated and lengthy to be quoted.

The Poor Photographer Again.—A correspondent says:—In looking through the *Court Circular* to-day, I read an article upon the Sands at Ramsgate, in which the noble art of photography is again placed in rather a ridiculous position. It ran thus:—"The announcements are not, however, of the same kind as in former years. The nigger band is not now complete without a punchinello with a hump and a falsetto voice. 'Mary Blane' and 'Lucy Long' are now supplanted by walks round, and 'Act on the Square Boys.' And a very important gentleman from the London music halls, with a self-sufficient swagger, and a tremendous amount of what school-boys call 'cheek,' fascinates the ladies of Ramsgate, and provides music-hall fare for an admiring audience on the sands. The Punch-and-Judy man *and the instantaneous photographer*, the provider of shocks from a galvanic battery and the tame cat who allows canaries to hop about under her nose and fires off a pistol, are all items of amusement," &c. The "instantaneous photographer" has, like water, found his level at last, it seems, and is classed with the Punch-and-Judy man. And so, in my opinion, will photography find its own level without much assistance. You know we have quack doctors, as well as quack photographers, only that the professional photographer has no diploma to prove himself by; but he can do so by his work, and the public are very rapidly learning to discern for themselves. And the only way, in my opinion, to improve our position is to raise the level of our work, and not to lower our prices. I have been a good many years in photography, though I am only a young man, and I have always found business improve from year to year, but it requires your work to keep pace with the times, or you will be sure to go to the wall. For my part, as far as photography is concerned, I mean to nail my flag to its mast, with the inscription, *Nil desperandum!* and to defy the cheap photographer. They (the public) can get so-called excellent photographs at two-and-sixpence per dozen and upwards. Let them go. In the mean time I will put on my hat and go and get a mouthful of fresh air, after a hard day's work in my studio.—Yours truly, S. C. W.

Test for Acetic Acid.—The value of commercial acetic acid can be estimated by ascertaining how much soda, or carbonate of soda, a given weight can neutralize. Inorganic acids, if present, would also neutralize the alkali; they must be tested for separately, or the determination corroborated, by evaporating the neutralized liquor to dryness, and calcining it at a red heat. All the acetate of soda is then converted into carbonate, the quantity of which may be dosed by the test acid; if it corresponds in quantity with the alkali first required to neutralize the acid, there is no mineral acid present; if it falls short, the difference may be ascribed to some mineral acid, the soda-salt of which is not decomposed by red heat. Good commercial acetic acid contains from eighteen to twenty-two per cent. of anhydrous acetic acid, and traces only of sulphates and chlorides. When one hundred grains of acetic acid neutralize sixty-two grains of crystallized soda, the acid contains twenty-three per cent. of anhydrous acetic acid. Acetic acid should be tested for lead and copper, for sulphuric, hydrochloric, and nitric acids should be entirely volatile on being boiled; and, when concentrated, its vapour should readily ignite on being approached by any flame. The strength of vinegar can also only be determined by the same means as indicated for acetic acid. When acetic acid or vinegar are evaporated to dryness on a water bath, after addition thereto of a few drops of a strong, clear solution of loaf sugar, there should not ensue a deep brownish or black colouration on the residue becoming dry, which would indicate the presence of sulphuric or hydrochloric acids. Vinegar always contains sulphates and chlorides, and, if deeply coloured, also organic matter. The presence of the salts just named is due to the water applied in making the vinegar. Acetic acid should be free from tarry matters and aceton; they will be discovered on gently evaporating, and also on saturation; best with pure carbonate of lime.—*Chemical News.*

Glycerine as a Substitute for Spirits of Wine for the Preservation of Zoological and Anatomical Preparations.—Dr. Koller recommends concentrated glycerine as being cheaper, not liable to evaporation, not combustible, and, moreover, as better preserving the natural colour of various preparations usually kept and preserved in spirits of wine. Glycerine, he states, answers this purpose eminently.

Strengthening Collodio-Chloride Images.—Dr. Vogel says: "I have lately found a very simple way of strengthening collodio-chloride of silver plates by means of iodide of mercury. One part of chloride of mercury is dissolved in forty parts of water, and a solution of iodide of potassium of the strength of 1·10 is added, until the red precipitate is redissolved. With this solution the fixed and washed plate is frequently flowed, and will take a greenish colour, which on washing will turn yellowish brown.

Photographic Caricatures.—To produce caricature photographs, place a convex mirror in front of the model, and point the lens at this through a hole cut in the background. Various effects may be secured by altering the angle at which the mirror is placed, or substituting for it a long, egg-shaped, concave mirror, placed lengthways or the reverse. The idea will take, as it will produce much fun.—*M. Linde, in Photo. Archiv.*

Collodion Formula.—Mr. F. M. Spencer, in the *Philadelphia Photographer*, says:—"I want to give my co-labourers a chance to test and report their success with my formula for collodion, which is as follows:—

Alcohol	11 ounces
Iodide of ammonium	88 grains
Iodide of cadmium	44 „
Bromide of cadmium	22 „
Chloride of magnesium	22 „
Pyroxyline	100 „
Concentrated ether	10 ounces

I compound in the order of the formula, taking care to have all the salts dissolved before adding the cotton. In practice I find this formula to make a rapid and highly stable collodion. I use a forty-grain neutral bath and ammonia iron developer. A good negative varnish may be made as follows, and much cheaper than that furnished by stock-dealers, viz., a solution of benzoin gum in alcohol of sufficient density to give a smooth, even coat, mixed with a like solution of coloured shellac, in proportion of one-third to one-half shellac to one of benzoin. Try the varnish; try the collodion."

A Half-length Portrait.—A correspondent of the *Philadelphia Photographer* says:—"One day, when operating in a city of Brazil, a countryman came in, and wanted a picture of himself. When told the price, 'two millreis,' he said: 'As I don't want a full-length figure, only a half-length, can't you do it for 'one millreis?' This we declined; but he continued to importune until my partner conceived the idea of having some fun with the fellow by a play on the term half-length; so he said, 'Give me your millreis, and I will take you a half-length;' and thereupon arranged him standing, and took a card melainotype from his waistband down. The look of stupid amazement with which he at first gazed at the picture of his not very elegant boots and unmentionables, and the spluttering anger in which he sought to explain that it was from the middle up, not down, that he wanted, kept the room in a roar for about half an hour, until he finally cooled off, and accepted our view of the contract, a half-length, which half not designated, and we chose what we thought the most favourable view of him; but, if he preferred the other half, he could have it by paying another 'millrois,' which he finally did, and left in tolerable good humour, but calling us 'Diabas Americanos.'"

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To Correspondents.

C. R. W.—Fog may proceed from so many causes that it is very difficult, without personal examination, to indicate the cause of any particular instance. Looking at the prints you send, we should have been tempted to believe that the fog was caused by light, either in the camera or the dark room. You say you are satisfied that it is not light. Have you taken care to ascertain that the window of your dark room excludes all actinic light? Are there no traces of white light admitted through cracks of doors? Do you take care that no direct or reflected light, except that forming the image, gets through the lens? Is the dark slide perfectly light-tight, so that no light enters the groove whilst the slide is pulled up? If you are satisfied on all these points, proceed to test the condition of chemicals. Coat and excite a plate, and develop without exposure to light; if you find fog, then proceed to ascertain from which article it proceeds. Bear in mind that an alkaline bath, or a bath containing organic matter, will cause fog. A new collodion will cause fog, and a developer with insufficient acid will cause fog. If your bath has been made of pure silver and pure water, it ought to be right; but it will be safe to neutralize with a trace of carbonate of soda, and sun thoroughly. If your collodion be new—which, from your remarks, it probably is—age will improve it, and in any case a few drops of a tincture of iodine will mend matters. Sometimes impure acetic acid will cause fog. Try a change if necessary. A little gelatine added to the developer will often prevent fog when, otherwise, there is a tendency to that defect. Short immersion in the silver bath will often remove it. 2. The stains on the prints are from two causes: the spots are caused by splashes, most probably from shutting down the slide hastily. The irregular markings are caused by the imperfect flow of the developer. This is probably due to the use of a new horny repellent collodion. It may be remedied by adding a little more alcohol to the developer, and by skill in manipulation. 3. Sulphate of quinine and bisulphate are not quite the same, the latter possessing two equivalents of sulphuric acid, and being much more perfectly soluble than the first. We cannot say the exact strength required for adiactinic solutions. Probably about one part in twenty.

J. F. BUTLER.—The form of stereoscope to which you refer is made by Mr. Meagher, of Southampton Row. The price we cannot tell you.

J. F. (Ashton-under-Lyne).—We have published various articles on the poisons used by photographers, and their antidotes, but not any tabulated statement of poisons generally, and their remedies. Most of the substances used by photographers are more or less poisonous, but the only very dangerous poisons are cyanide and bichloride of mercury. The first we have recently dealt with; and for the mercury salt, white of egg is the ready remedy. For nitrate of silver, a solution of common salt. Possibly we may some time deal with the matter in a systematic but concise form for reference.

A SUBSCRIBER.—Your question as to information on opal printing is a little indefinite. There is no work on the subject. We have published many articles on different modes. Which plan do you wish to use? Direct printing on opal glass coated with collodio-chloride of silver, or camera printing and development? You will find information which may help you in our last YEAR-BOOK.

X. Y. Z.—The best mode of dealing with a camera which does not extend sufficiently for the focus of the lens is to have a wooden cone made to fit on in front. This is the mode usually adopted, and is the most efficient. Any camera manufacturer will make it for you. There is a risk, in merely lengthening the tube, of cutting off part of the image. The lens you mention covers an angle of 60° with a large stop, or from 80° to 90° with a small stop.

H. F.—You scarcely afford us sufficient data to give you efficient advice. What is the appearance of the spots or stains on the negative which cause the irregular white spots on the prints? They are suggestive, in some respects, of matt silver stains; but they are scarcely sufficiently pronounced in the prints to be the result of such stains. The black spots proceeding from transparent spots in the negative may proceed from dust, from turbidity in bath, or from defects in the surface of the glass. 2. Acetic acid No. 8 is an American term by which glacial acetic is meant.

SYLVANUS URBAN, Gent.—We agree with you fully as to the best mode of securing success in the present state of competition, and also in your estimate of the vital importance of efficient means of lighting. It is quite unnecessary to tell you that a statement of the best general conditions would require a volume, and even of those suited to the particular case you describe would require many pages. A few hints may, however, aid your own judgment. In the first place, we should secure the thirty feet by fifteen feet available, and, with a good and uninterrupted north light, should avoid south light altogether. A lean-to form may of course be used; but we prefer the ridge roof, south side and roof being opaque, and part of north side and roof transparent. Mr. Robinson's old studio at Leamington, about which you enquire, is built on this principle, without especial circumstances to modify its action, and his present one at Tunbridge Wells is similar, with slight modification. His present room gives the most rapid results, combined with good lighting, of any room we know. Mr. Hughes's present studio is one of the best we know. It, though of different form, is similar in principle. M. Adam-Salomon's studio is similar in principle, but the roof is of ground glass. Mr. Slingsby's studio we have not seen; but he will probably oblige us with a description of it. A great advantage in rooms of the description mentioned, when they are sufficiently wide, is, that by slightly inclining the sitter towards the light, a variety of effects can be obtained, from extreme delicacy and softness of shadow to the most vigorous contrast. The flat roof and high side-lights which you suggest might possibly answer well; but it would be necessarily an experiment. We have not seen or heard of anything similar, but we have great faith in high side-lights. Our changeable climate undoubtedly requires special consideration, but a knowledge of such studios as that described last week aids the judgment. Some good men have great faith in the use of thin screens or ground glass, but we hold that, with the light properly arranged, clear glass and the strongest diffused light may be used with advantage. The room all glass, you mention, would be more "plague than profit." If you can spare the time, we should advise visiting one or two noteworthy studios before commencing the very important task of erecting a new one. If you think of doing this, and communicate with us again, we can probably help you in the matter. In reply to your categorical questions: 1. The best form is oblong with ridge roof. 2. The same in this case, securing the north side-light. 3. Sliding white blinds will be all that are necessary in this case. 4. We should have glass from within 18 inches of the floor to ridge; and laterally about 12 or 15 feet; eaves about 8 or 9 feet, ridge 13 feet or 14 feet. 5. The angle of roof would be regulated by width and height of room; with the proportions given, it will be about 45°, which will answer well. Thanks for the "Fish-wife."

A BAFFLED AMATEUR.—Probably Mr. Hughes's "Principles and Practice of Photography," price one shilling, will answer your purpose. If you will state your difficulty in detail, we shall have pleasure in helping you.

W. J. A. G.—We are glad to learn that the remedy has been so completely successful. The history of the small round spots you mention is curious, and worthy of further investigation. The occasional occurrence of blisters in varnishing after the application of gum is troublesome. The iridescent colours at the spots in question are caused by what is termed in optics "interference;" the colour indicates the presence of a thin film of air between the film and glass where it occurs, and it is the presence of this air which causes the blister. The film not being in absolute contact with the glass, the varnish percolates through, and gets under the film, and the blister ensues. The coloured spot is generally suggestive of an imperfect surface of glass, or of imperfect cleaning, or of dampness. These causes prevent the perfect contact of the film, and all the rest follows. The use of a varnish not requiring heat will sometimes permit such plates to be varnished without risk. We have heard that the application of stale beer sometimes answers better than even gum, and does not interfere with varnishing. Thanks: we shall have pleasure in receiving details of the trip you mentioned to us.

L. V. W.—The best mode of producing enlargements on canvas that we know, is that we recently described. The method of Mr. Lothian, which appeared in our pages a week or two ago, is well worth trying. A good plan, yielding rapid results, is as follows: clean the canvas with a solution of soda; sponge with an alcoholic solution containing three grains of iodide of ammonium, three grains of bromide of cadmium, and one grain chloride of calcium: when dry, apply a forty-grain solution of ammonia nitrate of silver containing one part of alcohol and three of water; develop with saturated solution of gallic acid. (This answer was accidentally left over last week).

CABINET MOUNTS.—In reference to Mr. Sugg's enquiry as to cabinet mounts with round corners, a correspondent states that he obtains them of E. A. Hulme, Birmingham, and another correspondent, of Brittain and McConnell, of the same town.

C. H. VINCENT.—The "Vade Mecum" duly received. Notice in our next.

Several Correspondents in our next.

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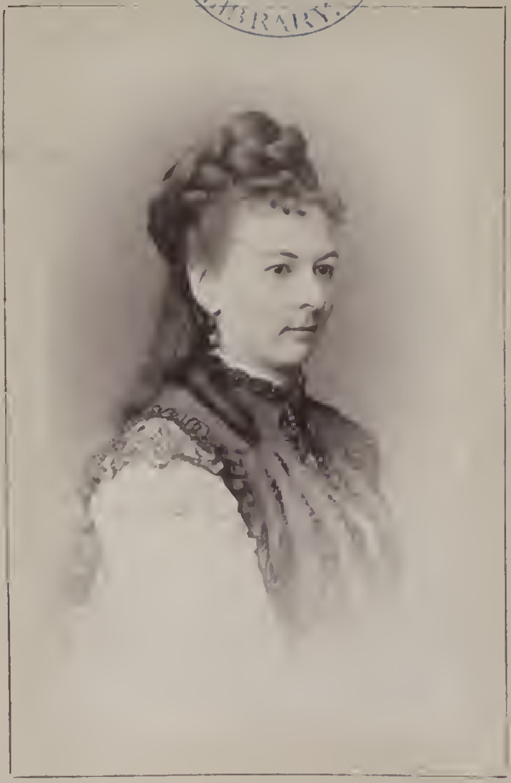

ALBERTTYPE,

A NEW METHOD OF PHOTO-MECHANICAL PRINTING, INVENTED BY JOSEPH ALBERT, MUNICH.

Presented to the Subscribers of the PHOTOGRAPHIC NEWS, September 24th. 1869.

THE PHOTOGRAPHIC NEWS.

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OUR PRESENTATION PRINT BY HERR ALBERT'S NEW PROCESS.

With this week's issue of the Photographic News we have pleasure in presenting our readers with an example of Herr Albert's new mechanical printing process, by which prints, in all respects perfect transcripts of the photographic negative, can be printed in a permanent fatty ink by a process analogous to that employed in ordinary lithographic printing. The first announcement in this country of the advent of the new method in question was made in our pages in January last; we were then able to speak of the single example before us as possessing rare beauty and perfection; and all the prints we have since seen, amounting to some dozens of varieties, ranging in size from card portraits to prints thirty inches by twenty, have more than confirmed our first impressions. Our readers can now judge for themselves how far our encomiums have been justly bestowed.

Of the process we have already published some particulars; but it may be interesting to briefly restate what is known of the operations. In principle the process is, as we have already intimated, analogous to lithography, but the results very far surpass anything which has ever before been produced by the various photo-lithographic processes, inasmuch as here the great desideratum of perfect half-tone, so long vainly sought in these processes, is secured. We have here the gradation of a continuous tint like that of photography proper, apparently without the aid of grain, stipple, hatching, or other mechanical substitute for true half-tone. Whilst the principle by which the prints are obtained is analogous to that upon which lithography is based, neither stones nor zinc plates are employed in the operation. The printing surface is a film of bichromated gelatine which has lost its power of absorbing water in the exact ratio of the action of light upon it, and in the exact ratio in which it has lost the property of absorbing water it has acquired the power of receiving a fatty ink; so that the portions protected from the action of light by the dense portions of a negative, when sponged, absorb water just in the degree in which they have been protected; whilst those portions upon which light has acted have been insoluble, hardened, and non-absorbent, in the precise degree in which light has acted thereon, passing through the transparent parts; and the portions so hardened, rejecting water, are readily coated with the fatty ink, applied by means of a roller, so that the printing operations closely resemble those of ordinary lithography.

The minute details of the process, upon which much of success depends, still remain the secret of Herr Albert. From the broad statement of the operations given by the specification of the French patent, we learn that the process in many respects resembles that of Tessie du Motay and Maresehal; but the modifications are sufficient to make all the difference between a practical and a comparatively unpractical process. The chief apparent difference is the substitution, by Herr Albert, of a plate of glass for the plate of metal of Tessie du Motay, and the use of the double coating of bichromate and organic matter; but there are other important differences, we apprehend, in the working. By the French process, not more than a few dozens at most can be obtained from one plate. By Herr Albert's process some thousands can be obtained from one plate. Several months ago he informed us that he had taken thirteen hundred prints from one plate, and he now assures us that upwards of seven thousand of the prints now presented to our readers are printed from one plate. Added to this, we may state that, beautiful as the prints of Tessie du Motay undoubtedly are, we have seen none of them which could compare in delicacy and general photographic perfection with those of Herr Albert.

The operations in producing Alberttypes may be briefly stated as follows: A plate of glass five-eighths of an inch in thickness is employed as the basis of the printing surface. It is coated with a solution of albumen, gelatine, and bichromate of potash, dried, and the whole surface is exposed to light to harden. This done, it receives another coating consisting of a solution of gelatine and bichromate of potash, and when this is dry it is exposed under a negative; and when it has been submitted sufficiently long to the action of light, it has acquired the various degrees of insolubility we have described, and is then fit for the operation of printing, in a manner resembling those of ordinary lithography, with such modifications as the necessities of the case demand. Much of the value of the process depends, we apprehend, on practical details worked out by Herr Albert, and not yet published.

The printing, so far as we learn, requires care and skill; and though not at present a very rapid process, is, of course, immeasurably more so than the quickest process of sun-printing. Some months ago Herr Albert informed us that he was then printing at the rate of one hundred impressions a day from about whole-plate or ten by eight inches in size. A recent visitor to the establishment at Munich states that from one hundred and twenty to one hundred and fifty impressions per day are produced, and as each plate may contain eight card portraits, upwards of a thousand prints daily may be thus secured. As Herr Albert has now twelve presses at work in his printing room, it will be seen that he can, if necessary, turn out card prints at the rate of upwards of twelve thousand every day. One important point to be remembered is, that as the prints are produced with a margin, no mounting is required,* and thus, for book illustration, an enormous advantage is secured.

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* Mounting in the case of our presentation print was obviously necessary, but not from any cause belonging to the process. The mounting was neatly executed by Mr. Fox.

We have examples of the process produced on various kinds of paper: some on plain photographic paper, which very closely resemble very fine plain paper silver prints; some on ordinary plate paper, similar to that on which engravings are printed; some on enamelled paper with a glazed surface, having great depth and brilliancy; and some on enamelled paper with a matt surface. The latter is the kind upon which our presentation copy is printed. As will be seen, it possesses a great advantage as regards delicacy and beauty of surface; but it possesses one drawback, from the existence of which some conclusions unfavourable to the permanency of the prints have been erroneously drawn. It is this: the enamel is soluble in water, and if the print produced on such a surface be sponged, the image can be removed; not because the fatty ink is soluble in water, but because the enamel surface upon which it rests is so. Those on plain plate paper cannot be removed by sponging, any more than an engraving could be removed by similar means. We may remark that we have examples of all kinds: portraits, landscapes, architecture, and reproductions in almost every size up to thirty inches long, all equally good; some of the largest being the finest.

The process is undoubtedly one of great beauty, and one of great economic importance. For book illustration its value can scarcely be over estimated, and in this direction it cannot fail to have extensive application. It affords us much pleasure to have the opportunity of first introducing an example to the English public, which pleasure we have had, indeed, in relation to almost every novelty of importance in connection with the art.

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NEUTRAL OR ALKALINE CONDITIONS IN THE WET PROCESS.

In the first paper read before the Photographic Society on the subject of the nitrate bath, as far back as 1853, the late Mr. Roger Fenton remarked: "I have always found that the greatest sensitiveness is produced by a bath as nearly neutral as I could get it." And in the same paper he refers to the method proposed by another member, of adding a little free ammonia to collodion to increase its sensitiveness. In Mr. Archer's earliest operations a neutral bath was used; and amongst the early collodion workers generally, a neutral bath was recognized as the condition of the highest sensitiveness. In the paper to which we have referred, Mr. Fenton mentions the mode of diluting a drop of nitric acid, so as to be able to add a fraction of it to a bath which, from the use of the ammoniacal collodion, had become alkaline. It was not until a later period that the bad practice of adding acetic acid to a negative bath became prevalent.

The plan of adding nitric acid in quantities larger than the fraction of a minim to the bath originated with the collodion positive operators, the aim being to obtain images of silvery whiteness; and as bromo-iodized collodion was almost invariably used for positives, it was discovered that the presence of nitric acid, which was fatal to rapidity when simply iodized collodion was used, in no appreciable degree increased the exposure when a bromide was present. Its chief action was to aid the production of a clean, thin, white, metallic-looking image. Positive operators, almost from the first, produced their negatives with the same materials as their positives, merely using some method of intensifying, or, as the phrase then employed expressed it, "converting" them into negatives. In process of time the use of bromo-iodized collodion and iron development became common in the negative process; but whilst the collodion, developer, and nitrate bath were all a little modified, so as to secure images less thin and metallic, the general conditions which obtained in the positive process were retained. Nitric acid, not acting as an appreciable retarder, and in some cases being regarded as an accelerator, was found to be valuable in securing cleanliness. It was found especially to be a ready aid to the production of a clean picture, when the condition of the bath and collodion conduced, without the presence of nitric acid, to give fog and stains. Hence, it has been commonly and freely used, and regarded as a valuable aid to the photographer. There is considerable reason to doubt whether nitric acid is not a treacherous adjutor, giving present appreciable aid, at heavy, but not immediately apparent, cost. The presence of nitric acid in a bath certainly does not conduce to its stability. Ether and alcohol are necessarily accumulating, and the action of an oxidizing agent thereon tends to the formation of aldehyde and analogous bodies, which ensure fog. Nitric acid, although not itself appreciably retarding, gradually produces retarding conditions. It is absolutely fatal, when present in excess, to the production of that fine bloom which marks the good negative, and it tends to the production of the thin grey or white image which is difficult to intensify.

A few photographers whom we have known have always been doubtful of nitric acid, and avoided it, or used it sparingly. Of these, Mr. Blanchard has been one. His negative operations, instantaneous and otherwise, for upwards of a dozen years past, have been conducted with bromo-iodized collodion and iron development; but he has generally aimed at working a neutral bath, and, as a rule, under ordinary circumstances, he has obtained sufficient density without any after intensifying. On another page will be found an article by Mr. Blanchard, in which he gives some experiences with the nitrate bath in a slightly alkaline condition, which deserve attention; and we have mentioned these details of his practice for many years past, with which we have been personally familiar, simply to show that his conclusions on the subject have been the result of long observation, and deserve consideration. Our space precludes entering further into consideration of the question now; but in our next we shall have a few observations on the possible means of rendering neutral or alkaline conditions available with little risk.

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ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

Part II.—Silver Printing—*(continued.)*

Before leaving the subject of silver printing on ivory, it may be as well to say a few words on substitutes for ivory—or, more properly, on artificial imitations of ivory. Instructions for the use of such substances scarcely come properly under the head of producing photographs on ivory; but, as a correspondent has especially asked for information on the subject, it may be desirable to glance at what has been done, with an especial view to enforce some cautions. The better to answer certain queries, we will reproduce our correspondent's letter. He says:—

"Artificial Ivory for Photographs.

"Sir,—In your articles on Photographing on Ivory, I observe that you have not—at least, at present—made any mention of artificial ivory. I believe there are various kinds of factitious ivory in existence, and, if I remember correctly, a patent was taken out some years ago for a form of artificial ivory for photographic purposes. I hope you will not conclude your articles on ivory without giving some information on this subject.—Very truly yours, "J. J."

"P.S.—I notice in one of your contemporaries that a correspondent describes a method of making artificial ivory for photography by means of gelatine and white pigment. Is such a perishable substance as gelatine a safe substitute for ivory? "J. J."

Various attempts have been made to produce artificial ivory for use in various art manufactures. Few of them have been successful for any purpose but for use in silver printing, except when used for transfers, they have all been worse than useless, the whole of them having issued in the production of prints much less stable than ordinary paper photographs. In all the methods which have come under our attention, gelatine or albumen has been the basis of the material, being generally used as the binding vehicle for some white pigment. A tablet chiefly formed of gelatine or a similar body becomes, when submitted to aqueous solutions, just as easily saturated as paper; but it is much more difficult to remove from it the traces of chemicals with which it has once been saturated, and hence perfect washing and removal of all traces of hyposulphites is almost impossible. In addition to this, the tablet, which has been for some time saturated with various fluids, generally twists and buckles in drying, in a manner exceedingly unsightly, and very difficult to prevent. We have seen some carefully produced photographs of this kind, which had been printed a year or two. They were of a dirty yellowish brown colour, partly the result of the ordinary discolouration which gelatine often undergoes, but chiefly, apparently, from the decomposition of sulphur salts, which washing had failed to remove. They were also so warped and twisted as to be useless, even if they had been perfect in colour.

The method to which our correspondent calls attention, so far as it is described, appears to be similar to those which have been tried, and some of them patented, before, and, we should fear, like the rest, untrustworthy.

About fourteen years ago Mr. Mayall patented certain applications of artificial ivory for photographic purposes, and produced, we believe, some pleasing results; but, finding them untrustworthy as regards permanency, he discontinued the production of photographs of this kind. His specification described four methods of producing artificial ivory for this purpose, in each of which gelatine or albumen was the vehicle employed. The first method consisted in the preparation of tablets of what was known as Pinson's artificial ivory. The mode of proceeding was as follows:—Slabs of ordinary gelatine were immersed in a bath of alumina held in solution in sulphuric or acetic acid, a complete combination taking place between the gelatine and alumina, producing a white tablet like ivory. This was allowed to remain in the solution until the desired result was produced; it was then removed, allowed to dry and harden; after which it was dressed and polished, and was then ready for photographic operations.

In the second method it was stated that alumina might be mixed directly with gelatine or glue, and sheets resembling ivory tablets manufactured therefrom.

In the third method, equal portions of bone dust or ivory dust and gelatine or albumen were worked into a paste, and afterwards rolled out into sheets. These were allowed to harden, and were then cut into slabs of the required size. These were then ready for printing on.

In the fourth method, finely poured baryta and albumen were well worked together, and rolled out into slabs, which were scraped and polished, and were then ready for use.

The slabs produced by any of these methods—the last of which was preferred—were, as we have said, scraped to a fine surface, washed with alcohol, and then printed by any of the known silver processes, and, after fixing, were immersed in weak nitro-sulphuric or nitro-hydrochloric acid, for the purpose, we presume, of decomposing remaining traces of hyposulphite; after washing, they were dried under pressure to keep them flat. From first to last, it will be seen that a tablet of a gelatinous or albuminous substance would be difficult to manipulate in a succession of aqueous solutions, and require much care to get a good finished result, and when a fine picture was secured its permanency was more than doubtful.

Imitation ivory tablets may with advantage, however, be used for transfer purposes, in either silver or carbon printing. In Mr. Burgess's eburneum process this is practically effected, the tablet being manufactured of gelatine and zinc white, and poured on the collodion print, which, when the tablet is set, leaves the glass, and, on the tablet thus manufactured, presents no bad substitute for a photograph on ivory. The same method might be pursued in relation to carbon prints. The print, having been developed on a plate of glass or metal by Mr. Johnson's method, might be coated with the gelatine and white pigment, and finally transferred in the same manner as the collodion print in Mr. Burgess's process.

Tablets for such transfers might be kept prepared for use; but the operation of transferring would not be quite so easy with the rigid tablet as it is when the mixture in a state of solution is applied. Such tablets might, however, be used with advantage if collodio-chloride prints were employed and transferred in the manner recently described by Mr. C. Durand.

MASKS AND FACES.

BY PROTAGORAS.

Part XII.—"Brown" Invents a Photographic Baby.

Brown.—"Well, old friend, how are you to-night? Better, I hope, than you were last time. You were awfully knocked up with those babies then. I don't think I ever saw you in such a state.

Protagoras.—"Yes, I am better to-night. I was dreadfully used up then. Things have gone more comfortably since. I confess I am ashamed I gave way, and railed so against the babies. Bless their little hearts, I am very fond of them, and of young children generally, especially when they are well brought up; but I cannot bear to see the dear little things badly trained. It's a sad reflection on the parents when you see them hold down their heads, and run under their mother's wing at the sight of strangers. Depend on it, there is no better test of how a child is trained than its behaviour when it is brought to have its portrait taken. I could tell no end of anecdotes of the little people whom I have photographed. I always assume at once the full familiarity of long acquaintance with them. If you are distant and strange, the child will be doubly so. 'Well, my little man,' said I, yesterday, to a sturdy, noble little fellow of about two years and three months, as he toddled into the glass room; 'shake hands, and what is your name?' 'Tobby Tobsun,' was the frank reply the little fellow gave, as I placed him in position. His mother explained that this was supposed to be 'Thomas Thompson.' 'Well, Tommy,' said I, 'how old are you?' Meanwhile my assistant has the plate ready, and is getting the camera in order as I am looking out some toys to engage 'Tobby's' attention. Instead of telling me his age, which, I suspect, would be more than he was able, he, seeing I have a toy dog in my hand, exclaims: 'By tog at 'ome is a live tog; yours isn't.' 'Oh! isn't it a live dog? You shall hear directly. Bow, wow, wow!' 'Dat wasn't te tog, dat was you.' 'Tobby' knew better than to be so easily deceived; but while he and I were having our interesting conversation, my assistant got a negative with about three seconds' exposure, in which 'Tobby' was as nearly still as possible. That's the way I go on, and if the children are what I call natural children, not spoilt ones, I easily get their portraits. When they are shy and won't leave mamma, the case is different. I give it up then for a bad job. Unless I catch the child in the first or second plate, I have no hope; it soon becomes either too tired or too familiar. There is no hope then. I always think it best to have an assistant to work the camera. While I am engaging the child he watches for the favourable instant to open and close the lens, giving as long an exposure as circumstances permit. If one has to manage the camera and watch the child too, the chances are largely against success. Besides, the child must always have a full face if you have it looking at you while you are at the camera, and, with the amount of light from all sides that you are obliged to use for a child, the full face is the worst view of it."

Brown.—"That plan is all very well when you have children of an age that they can understand you, but it won't do for babies. How do you do with them?"

Protagoras.—" I do the best I can. I generally get the mother or the nurse to hold them in the lap."

Brown.—" You don't like taking baby and the dog romping on the floor."

Protagoras.—" I should think not. Even when I have it on the lap, I have as much difficulty with the mother or the nurse as with the baby. If the baby is still, ten to one if the mamma does not move; or, if she doesn't move, objection will be made as to her face being too dark, or her expression too grumpy. Taking the baby is, under every circumstance, very unprofitable work, and where I succeed once, I fail ten times. Many people charge double for young children, and I think everybody should."

Brown.—" I think I have solved all the difficulty for you, so far as the babies are concerned."

Protagoras.—" What do you mean, 'Brown?'"

Brown.—" Since I saw you so knocked up the other evening, I have thought whether the difficulty might not be got over by other means. I believe I have succeeded. I have got a baby that will not move, cry, scream, nor give any infantile trouble."

Protagoras.—" *You* got a baby! Why you are a bachelor! What business have you to have a baby?"

Brown.—" I mean I have invented one."

Protagoras.—" Invented a baby! The idea!"

Brown.—" You may smile, but I think the idea is a capital one. I consider it so good, that I have serious thoughts of patenting it. I propose that as all babies are so much alike, there should be kept one in stock in every photographic establishment. Where there is a good business done, I would advise several to be kept—some with blue eyes, some dark eyes, some with a little hair on, and some as bald as an old man of ninety. I propose, when a mother comes to have her baby taken, that instead of sitting with the real, live, squalling one on her knee, to have the pretty, quiet, dummy one instead. All difficulties will then be got over, and the mother can then sit without any anxiety of the baby moving, and she can give her sweet maternal smile without anything to distract her attention. Or, if she wishes baby's portrait to be taken alone, it will be the easiest thing in the world to do it; she will only have to pick out the dummy baby the nearest like her own—she will be sure to pick the prettiest—and, dressing it in the clothes she provides, the thing will be done without any difficulty. If there be choice enough provided, she can have a laughing, a smiling, a crying, or a serious-minded baby. She can also have it in any attitude she chooses, for my newly-invented baby I propose to make in some india-rubber and gutta-percha material, that shall be capable of being bent into any form, and to retain the shape till the sitting is over. Besides, the idea is capable of carrying further; the photographer, at his leisure, can make pretty studies of his babies, and have them already printed, so that the mother has nothing else to do but pick out the one she likes best, and the thing is all over."

Protagoras.—" But how about the likeness—do you consider that of no consequence?"

Brown.—" Likeness! What likeness is there in young babies, to distinguish one from another? Do you mean to tell me that if twenty young babies were all put naked and sprawling in one large bed, that even the mothers would be able to distinguish one from the other? As they grow older, of course their characters develop, and differences are to be observed; but my ideas chiefly apply to them when they are in the swaddling long-clothes condition."

Protagoras.—" You might easily get the photographers to fall in with your views, and perhaps a few of the fathers might, but the mothers would all be dead set against you."

Brown.—" Oh, I don't know about that. It would certainly save you people no end of trouble, and I wonder that you are not taken with the project. As to the likeness, why I maintain that in photographic portraits of babies there is no likeness to be considered. Only think of the strong light you throw on these poor, pale, colourless, expressionless dabs of humanity when you take them. If there were any likeness in particular, you do your best to destroy it. Then, if you consider the under-exposure these negatives generally have, with the face buried in a mass of white clothes, you can hardly be surprised that babies' portraits are such failures as they always are. Why, if you were to take your nearest friend, and put him in as strong a light as you would a baby, put a white cap on his head, and white clothes on his figure, lay him on his back, and then take his portrait, his face not so big as a pea, would you be surprised if you could not detect the likeness, especially if he moved a little while being taken, and you gave only half the time you ought? Likeness in the portraits of young babies! The bare idea, when you come to think of it, is absurd. If every establishment kept half a dozen well modelled babies, and these were well taken, the one being selected the most like the baby desired in size and complexion, I declare that far more real resemblances would be secured than operating on the real thing itself."

Protagoras.—" Ah, 'Brown!' you are not a father nor a mother, only a miserable bachelor, or you wouldn't talk in that heathenish manner."

Brown.—" I see you have the same limited notions you always had—always sticking to the same groove. However, on second thoughts, although I know the idea is a good one, yet taking out a patent would perhaps not be the best way to get my idea reduced to practice. The old trouble would crop up: somebody had done it before—opposed to progress—restrict the development of the art, and all the rest of it. A better plan would be to start a company, ten pound shares, limited liability. That's the correct thing now-a-days. Have you any idea of the statistics of portrait photographers? I should think there cannot be less than ten thousand of your portrait-taking shops."

Protagoras.—" Please use the correct phrase, 'professional photographers;' it is more respectable."

Brown.—" I like 'shop' better, but I suppose I must pander to your prejudices. Well, suppose there are ten thousand of you; each one will require at least one of my babies, and the most enterprising will require half-a-dozen; that would demand, say, as a moderate estimate, thirty thousand babies for a start. Well, nobody could object to paying, say, three guineas for each baby. That would really be too cheap, but say three guineas to begin with. Of course, we could have aristocratic babies for the upper classes at, say, five or six guineas each. Now suppose these could be manufactured at half the price, that would leave at the lowest computation, forty-five thousand pounds profit, or fifty per cent. on the outlay. Of course there would be some expenses, but not many. I think it will be a good thing, and that a very handsome dividend can be *promised*. Then the babies would require renewing from time to time; say an income of ten thousand or fifteen thousand pounds a year would arise from that source. Then there is the supply that would be required for the colonial and foreign market. Why, America alone would take as many at least as all Great Britain and the colonies, to say nothing of France and the rest of Europe."

Protagoras.—" Don't you think, 'Brown,' you are counting your chickens rather too fast?"

Brown.—" Oh, dear no! I know what you are thinking about—the many schemes of companies that have been connected with photography, and how they have failed; but the difference between this and the former ones is, that mine is really a good idea, the others have been absurd."

Protagoras.—" How much money do you propose putting into the concern yourself?"

Brown.—" Me put money into it! Not if I know it. Did you ever know the projector of any company, especially a limited liability one, who ever put money into it? It's to get money out of it that I start it. Do you think that people who start and advocate and push such concerns ever put money into them, particularly if they are photographic ones? Why, you are more innocent than I took you to be. How many shares will *you* take if I make you a director?

Protagoras.—" How many shares will you give me to lend you my name and interest?"

Brown.—" That's a matter of detail of which we may speak hereafter. In the meantime, couldn't you write a stimulating article in the journals? Let me see, when does the next photographic exhibition of the London Society take place in Conduit Street?"

Protagoras.—" In November."

Brown.—" November! I'm afraid that is too soon to get one of my babies ready. However, I'll see. At any rate, I can get the prospectus out of my company. What shall the title be? I have it: 'The Photographic Anti-moving, Never-howling, Model-Baby Company, Limited Liability.' There, I think that will do."

Protagoras.—" I am glad you didn't forget the 'limited.'"

A PROBLEM FOR PROFESSIONAL PHOTOGRAPHERS TO SOLVE.

BY GEORGE HOOPER.

How is it that during this season of the year so many of our countrymen patronize the Parisian studios?

In discussing this matter, some may be disposed to put the question whether it is a fact that our French brethren have an annual rush of English customers, or whether it is only supposition. I reply to this, that it is only necessary to make a few enquiries to ascertain the facts, and they are so easily ascertainable, that a special commission is not at all required for the purpose. Some of the largest and best French houses find it answer their purpose to keep an English assistant, and others find it indispensable to learn the elements of the English language, although a very large proportion of the portraits taken by our French artists are by those that cannot speak one word of English, and are entirely dependant upon the scanty knowledge of French possessed by most of the English ladies and gentlemen who frequent these studios. Again, it is scarcely possible to take up an album in a drawing room in any fashionable house without finding many French productions.

Is it simply to prove to friends that they have really been in Paris? Or is it more to boast of having had a portrait taken by some famous French artist, and to hold the same up as superior to any taken over here? I fear the latter is often done, and this should lead us to ask ourselves—Firstly, if they *are* generally superior? Secondly, if so, from what cause? And, thirdly, is it possible to overcome and eradicate this general impression? I answer, it is possible, and rests more with the professional portraitist than with the public.

I am fully aware there are many people amongst us whose chief characteristic it is to be dissatisfied with everything English, and are continually holding up foreign productions for our imitation; but does this hold good with the question in hand? I think not; for the productions of our French brethren are, as a whole, generally superior to those taken in this country, and the causes are many and various—far too numerous to discuss in this article. There are many things that induce English ladies to patronize the studios situated along the principal Boulevards, &c., where magnificent and highly-finished specimens are hung out, in many cases far better than the general run of the work that that house produces; but this is not all. The posing of the French artists is very different, and much more suggestive of ease, &c., than most of our English productions. How is this? I argue that it is not altogether the fault of the operator, as he has to deal with a different model. The English ladies, as a rule, are more reserved—and, perhaps, modest—in their deportment than our French neighbours, brought about chiefly through living in a more private capacity, and only mixing up with those more immediately connected with themselves, and thereby become more reserved when in public and with strangers. Where is this more plainly manifest than in travelling in this country? How very difficult it is sometimes to draw out your companions in conversation, whether they be ladies or gentleman; whereas, on the Continent, it is the rule, and not the exception, to converse. But I am rather digressing; let me return. Any English portraitist that I may be addressing, that has had much experience with posing French ladies, must have noticed how much easier they could obtain the pose they required or fancied, on account of their natural tendency to grasp quickly the idea of the artist, and do their utmost to comply with his wishes; in fact, giving themselves up entirely, for the time, to be handled by the artist as he may desire, not for a moment questioning his superior judgment.

Now I do not wish to be unfair to my own countrymen; but they do not possess this ease and, if I may so express it, affableness of manner, that is so essential an aid to the artist. It is very usual for them to suggest something, or, as is frequently the case, object to something—such as to bending the body a little forward, and thus, as they fancy, lessen considerably their height; or they want both hands showing, and insist upon having outstretched fingers; some jewellery, or else some portion of the dress or trimming, brought prominently forward; and have a great dislike to appear any how but as if they were sitting for the express purpose of looking their best, and, consequently, get over-anxious. The features become set, and, after, all fail to obtain an easy, careless, but natural portrait. As an example of this difficulty, I might narrate a little circumstance I had a few years ago. A lady of considerable height and size was shown into the studio for a (ten by eight) portrait, and a gentleman, who had no small amount of self-esteem and personal pride, accompanied the lady. No sooner had I commenced posing the lady, than this gentleman interfered, and was full of suggestions, and began to pose the lady himself. This proved a total failure, as he was not aware of the capabilities, or, rather, the incapabilities, of the lens; and when I mildly suggested his sitting down and allowing me to proceed, he was rather exasperated, but temporarily obeyed. However, I had no sooner recommenced posing the lady, but he again interposed, and this led to an encounter. Turning round to the gentleman, I asked him whether he held me responsible to produce a portrait of the lady for the two guineas he had paid? He replied in the affirmative. I then requested he would either sit perfectly still, and let me proceed, or else retire to the reception room. Should he do this, I would guarantee a successful portrait; but if not, I should decline to take the lady altogether. This firm attitude brought him to his senses, and the result was a success.

In conclusion, I fancy my readers may be arguing whether it is not the same when such parties are taken by our French artist. I reply, no; because, as a rule, they throw themselves more into the artist's hands, and, through feeling a backwardness to letting out some very imperfect French, let him do almost whatever he likes, without raising a single objection; and this, together with a good, quick light, often enables the Frenchman to beat his English competitor. And then it should also be borne in mind that most of the portraits taken in Paris are during this season of the year, which is particularly favourable for good work. Again, photography in this country has not had that encouragement and position given it which it has received in Paris, Berlin, and Vienna. Not only has a higher class of work been encouraged in all these capitals, but the public generally have taken a far greater interest in its progress than in this country, and that is partly attributable to the general apathy of the English character, and its eagerness for commercial pursuits in preference to anything of an art nature. Photography in this country lost a great and true friend when the late Prince Consort died; but is it not possible yet to rouse the British lion to more enthusiasm? How is it that so many are still satisfied with a very doubtful work of art, and grudge paying a fair price for that which is the result of genius, and also of much practice and research? The best motive power that can influence portraitists is to believe their art is still in its infancy; that much remains yet to be discovered; that perfection is attainable, and the prize yet to be won. The public have yet to be educated in art, and that can only be brought about by a more combined effort on the part of those practising the art.

Let art, like science, be developed by careful study, application, and practical development. Combined action and concentration of results achieve great ends, and will do much to further its demands; and that which seems at present far off may very shortly be nigh at hand; and that country which first makes a decided advance will be the first recognized and patronized; and although others may follow, it will demand more yet at their hands, as the nature of all things is to be exacting; and perhaps this is more exemplified in art than in commerce. For an illustration: if Adam-Salomon pictures become the rage, a greater than Adam-Salomon must spring up in this country to even equal his productions in the eye of the general public. An impetus has been given to portraiture by these fine specimens, but there is no satisfaction in standing still. Ten years hence, and Adam-Salomon portraits may become as general as bad or ordinary photographs are now. All the world is moving onwards, and so is photography. How can the status of photography in this country be raised? is the present grand problem, and all such as combine and aid in its rapid progress, entering into it with spirit, determination, and perseverance, are those that are working towards that desirable end. And may we not look forward to a day not far distant, when portrait photography in this country shall hold a position that it may well be proud of? And may those who have assisted its accomplishment have the satisfaction of feeling that they have completely changed the vulgar eye of the public, and done much to stimulate art education generally, and thereby further developed the intellectual qualities of the mind of our fellow-creatures.

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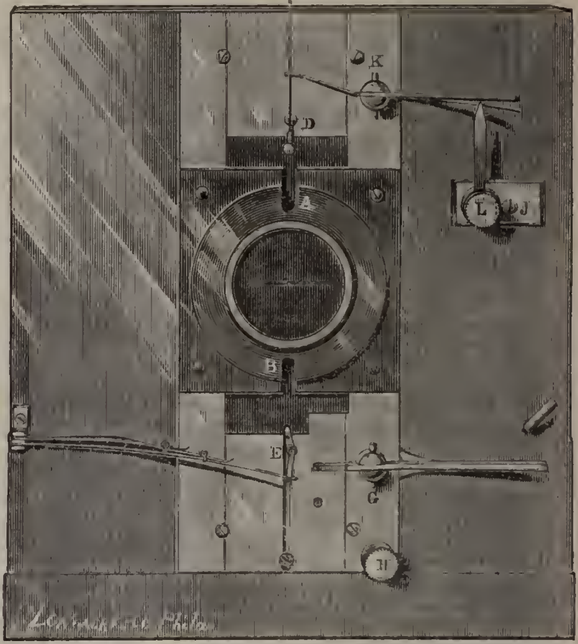
THE PHOTOGRAPHIC RECORD OF THE SOLAR ECLIPSE.

We have already laid before our readers details of the successful operations in photographing the recent solar eclipse in America. Advance copy of Professor Morton's official report, and a series of the admirable photographs with which he has also favoured us, furnish us with further interesting particulars. We may observe, in passing, as a gratifying illustration of liberal public spirit and interest in science in America, that we learn that all the personal service in the recent observations was gratuitous; and that a special carriage and free transport for apparatus and the members of the observing party were afforded by certain railway companies over many hundreds of miles of railway, effecting a saving to the expedition of about fifteen thousand dollars, or nearly three thousand pounds. This saving enabled Professor Morton to organize a triple party, and give greater completeness to his observations than he could otherwise have done. Of the *personnel* and general operations of these parties we have already published some particulars. We proceed to give details of optical and photographic operations as described in Professor Morton's report. The work of designing and constructing the lenses employed, and also the means of securing exposures of any rapidity from the fraction of a second upwards, was placed in the hands of Mr. Zentmayer, whose scientific knowledge and optical skill, it was considered, best fitted him for the task. The apparatus arranged for pursuing De la Rue's method, with some modifications, is described as follows:—

The camera, as finished, is represented in the accompanying woodcut, which shows it as seen from directly in front.

Here A B represents the face-plate of the camera, to which the eye-piece tube was attached, its other end being screwed to the telescope. The diaphragm plate, D E, moved across the axis of the instrument, being drawn downwards by the combined spring, E F. The strength of this spring could be reduced by raising the outer end of one or both the upper strips, so as to disengage the forks at their end from the lower spring, and then turning them forward in a direction normal to the front of the box, out of the way.



The spring was attached to the diaphragm plate by a swivel hook, which, while in no instance falling out, could be detached and readjusted with the greatest facility.

A number of diaphragm plates were provided, with slits respectively of one-fortieth, one-thirtieth, one-twentieth, and one-tenth of an inch in width. These plates could be readily interchanged, and, in combination with the springs, gave a very wide and yet delicate series of fixed adjustments for the times of exposure.

To make the exposure, the plate was drawn up until the projecting pin, D, could be caught on the lever, K, which would then retain it. On depressing the outer end of this lever, however, with the finger, the hold on the pin was disengaged, and the plate flashed across the axis of the tube, allowing light to traverse the narrow slit as it flew past. The plate was then arrested on the end of the second lever, G. When an exposure of some seconds was required, as during the totality, a plate having a round orifice exposing the entire field of the eye-piece was substituted for the one with the narrow slit, and was so arranged that, when caught by the upper lever, it covered the lens, but when fallen to the second lever, exposed it entirely; when, however, this lever was in turn touched, the plate descended again far enough once more to close the lens. By touching these two levers in succession, it was then possible to make a "time exposure" with great nicety and accuracy, as proved by actual experience during the eclipse.

To secure a chronographic record of each exposure, a binding screw was provided to make one connection with the general mass of the face-plate, including lever K, and another at L, to carry on the circuit when the downward motion of the lever brought the spring at its side in contact with the point projecting from L. In raising the lever for a new exposure, the spring at its side was pressed back so as to pass the point without contact. A more substantial break-piece would have been made, had time allowed, but this was found to operate in a perfectly satisfactory manner.

As the operation of the eye-piece, when employed to produce an image on the screen or ground glass of a camera, is essentially different from that which it performs in its usual office, it was judged best, by Mr. Zentmayer, to make some alterations in its form. Thus, in the first place, since in the present case the "eye-lens" of the eye-piece undoubtedly makes a secondary image of the primary image formed within the eye-piece by the combined action of the objective and the field lens of the eye-piece, it is clearly desirable to make this lens of a longer focus than usual, so that its errors may be of less account. It was also essential to give the new eye-piece a wide angle, so as to secure a sufficient field not only for the solar disc, but also for the corona.

While, therefore, the ratio of focal lengths in the two lenses of the ordinary eye-piece is usually 1·3, it was, in this case, as 1·2. While the distance between the lenses is usually the sum of their focal lengths divided by two, it was here made equal to the sum of the focal lengths, divided by 2 plus ·24 inch. This was to give space for the introduction of the reticule of spider lines which would otherwise have been brought too near the field lens, and also to keep this lens beyond the conjugate focus of the eye lens, as otherwise particles of dust on the former would have been too faithfully portrayed by the latter.

The elements actually adopted were as follows :—

	ft.	in.
Focal length of objective	8	6
Radius of field lens		1·375
,, eye lens		0·687
Focus of field lens		2·6
Diameter of field lens (= R)		1·375
Focus of eye lens		1·3
Diameter of eye lens (= R)		0·687
Distance between lenses, 1·95 + 0·25 ...		2·2
Equivalent		1·75
Distance of reticule from eye lens for 5-inch distance of ground glass		1·62

The reticule was mounted on a short tube with a fine thread on the outside running in a corresponding thread on the inside of the eye-piece tube. This, being approximately adjusted beforehand, was moved to its exact place by turning it with a sharp point through a little slot cut in the eye-piece tube.

It was found in some prior experiments that, with a clear sun, it was necessary to reduce the aperture of this telescope (which was four inches, with fifty inches focus) to one and a-half inches, and to use all three springs and the diaphragm slide of one-fortieth inch aperture, in order to get a proper exposure when the solar image was enlarged from ·6 inch (its diameter at the principal focus of the objective) to two and a-half inches on the ground glass. The same size of aperture was adopted for the larger instruments during the partial phases, the entire aperture, in all cases, of course, being used during totality.

Details of dividing the party into three sections for observation at different points, and of the preliminary arrangements having been stated, a description of the operations of which we have already given some account, follows. As we have already said, besides the progressive records of the eclipse—which, as we ascertain from the series of prints before us, are excellently rendered—a very admirable photograph of the totality, showing the corona, was obtained. Professor Morton says:—

One of the objects which it was considered desirable to secure, if possible, was a view of the corona. It was with this intent that some of the exposures were made so long.

Examination of the negatives shows us that five seconds was more than sufficient to secure all the details of the protuberances, although it gave no decided indication of the corona.

The development proceeded slowly in all but a few spots where very massive prominences were located, and thus it was not thought, at the moment, judicious to try shorter exposures; but, in the light of our present experience, we would judge that exposures of even one or two seconds, with persistent development, such as could be best carried out on albuminized plates, would be of value to secure details in the rounded and massive prominences which appear at some points.

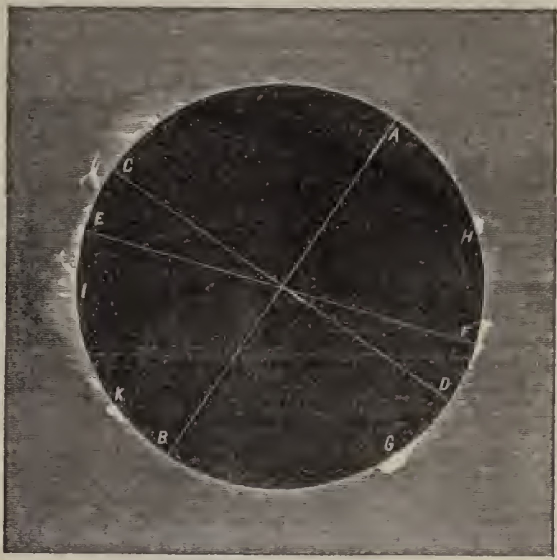
It is a curious coincidence, that in this case, as well as in the pictures made by De la Rue in 1868, and the German and English party last year, all the more interesting prominences are situated on the border of the sun furthest from the advancing moon, and are thus best shown in the pictures first exposed. Thus we have selected half of the first totality picture taken at Burlington, to be used as an illustration in this place, as enabling us to give it a large size without exceeding the limits of our page, and yet secure nearly all that is of interest.

The most conspicuous prominence is that which, at a hasty glance, seems to resemble the letter X, but, on more careful inspection, is perceived to be like an ear of corn. It consists of a solid central mass inclined at an angle of about 45° to the normal at the solar surface, and with three branches from near its upper end, one sweeping backwards in the direction generally parallel to the solar surface, another forward as concerns the direction of the general mass, and a third branching out a little below and running in the same direction as this last. The appearance of the main body, which is of a spindle shape, and with spiral markings, is highly suggestive of a vortical motion which has swept these whiffs of light matter into their peculiar positions.

It was believed by several observers, that this object moved rapidly while they were watching it; but as the same positions are shown in the eight different negatives (taken at Burlington and Ottumwa) which contain it, there can be no doubt of its permanent character.

It appears, however, beyond doubt that motion, amid the light surrounding the sun, was observed, as there is much accordant tesimony on the subject. But this motion, as we shall presently see, there is every reason to believe existed in the corona, and not in the prominences, which, however, might easily have the appearance of movement, if seen against a background of shifting light. To this subject we shall refer again when speaking of the corona.

Immediately to the right of this ear of corn is seen a region of soft light, among which rise two similar spindle-shaped masses, inclining towards the corn ear.



To the left appears a mass of rolling cloud disposed in beautiful streams and curls, like the smoke from a bonfire or burning meadow, swept gently towards one side by a light wind. In connection with these are some small masses, entirely detached and floating above the general body, as was the case in De la Rue's pictures.

Other solid nodular masses appear at other points; but the next most notable prominence is one which attracted the attention of all observers, and appeared to occupy a position on the lowermost edge of the sun. It is most clearly shown in the last pictures taken at each station, and resembles, in shape, a great whale with a body made up of dense cumulous cloud matter, with a long tail clinging close to the solar edge, and stretching some 40,000 miles along. The length of the entire mass is about 110,000 miles, and the height of its more bulky portion about 28,000 miles, while its length being about 70,000 miles, we should have for its cubic capacity, assuming that its extent in the remaining direction is equal to its height, about 54,880,000,000,000 cubic miles.

To the right of this, and only showing its entire length in the last picture of each series, is a caterpillar-like mass of cloud matter, very much like the solid rolls of horizontal vapor which are sometimes seen passing over a sheet of water. At one end rises a projecting head, but the rest clings closely to the solar edge, and is indented with ring-like divisions, giving it much the aspect of a huge worm.

The brightest outbursts of the corona light are evidently associated with those prominences which are of a pointed and flame-like shape, those of a massive description, on the contrary, seeming to cast a shadow on the corona; this, we think, is to be noticed in De la Rue's pictures.

These facts have peculiar significance when taken in connection with others developed by observations made during this same eclipse. In the first place, Prof. E. C. Pickering, of the Massachusetts Institute of Technology, who was with our party at Mount Pleasant for the purpose of making various physical observations, found that while the sky was strongly polarized all around, close up to the corona, that object itself was not a source of polarized light.

The instrument employed was a tube, having at one end a large plate of quartz, and at the other a double image prism of Iceland spar, made in the manner known as the prism of Rochon.

On looking through this at the corona, the entire circle was in field with a part of the surrounding sky, and two entirely distinct images of the entire area were seen, the corona in both being colourless, but projected on a ground of tints, complementary in the two images.

This would certainly indicate that the light of the corona was not reflected sunlight. With a spectroscope arranged to analyze the entire light from the totality phase, Prof. Pickering also found no dark lines in the spectrum. This also points in the same direction.

The observations of Prof. C. A. Young, of Dartmouth College, Hanover, N. H., who was stationed at Burlington, are most conclusive. He found bright lines in the spectrum of the corona corresponding with those given by the aurora. In a letter which I have just received from him, he says:—

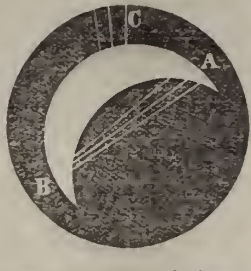
"Since returning, I have seen the last (July) number of Silliman, and in it the positions given by Winlock for five aurora borealis lines. You will be interested to learn that so far as I can ascertain by graphical construction, the corona line at 1550 of Huggins' chart exactly coincides with my principal aurora lines 1474 Kirchhoff; and, moreover, the aurora lines 1280 and 1400 (Huggins), agree, as far as I can judge, with the two fainter corona lines between D and E, which I saw and recorded, but had not time to measure accurately.

"Perhaps I am too bold in my conclusions, but at present I feel persuaded that the *solar corona is a permanent aurora.*

"All three of these aurora lines are given by Angstrom as *iron* lines. What is the meaning?"

It would thus seem almost certain that the corona is simply an electric discharge, no doubt varying with great rapidity, as we see in the case of the aurora, and to its variations we may attribute those apparent motions of the prominences which have been observed by so many, but which our large series of photographs so conclusively shows not to have had any actual existence.

At one of the stations Professor Himes and Mr. Zentmayer observed a very curious effect, which seemed to indicate the presence of a meteoric shower. It occurred about twenty-five minutes before the totality, and had the appearance of



"some bright objects on the ground glass, crossing from one cusp to the other of the solar crescent, as indicated in the accompanying cut by the lines from A to B."

Professor Morton says:—

Each object occupied about two seconds in passing, and they all moved in right lines, nearly parallel, and in the same direction.

These points were well defined, and conveyed to the mind of Mr. Zentmayer, who is accustomed to the use of the camera for photographic purposes, the strong impression of being images of objects, and not points of light merely.

It is, moreover, certain that the objects, whatever they might be, must (in order to have produced such sharply defined images on the ground glass) have been several miles distant from the telescope, as even a point of light at a less distance would have produced an image enlarged and with a hazy border.

After calling Prof. Himes' attention to this phenomenon, and observing the motion of some eight or ten bodies in all, Mr. Zentmayer then noticed three others coming in from the limit of the field and disappearing in the solar crescent, as shown at C, but not reappearing on the other side.

It is worthy of note, that the direction of motion in the three last of these bodies corresponded with that of the wind blowing at the time, but that of the others did not, and they are thus, as also for others reasons, unlike the plant seeds noticed some years ago by Rev. W. R. Dawes, and described in a paper published in the *Monthly Notices* of the Royal Astronomical Society, for 1852, page 183.

We consider it right, however, to record the observation made by our party, as other observers, in very distant locations, have noticed phenomena which, according to the very general report as yet published, must bear some close relation to these, and this confirmation and additional data may thus aid in some valuable deduction. If these were meteoric bodies between us and the moon, and also beyond our satellite, their probable appearance would not be inconsistent with the observations recorded.

The report closes with a high tribute, by Professor Morton, to the ability and cordial co-operation which distinguished the operations of his party, and secured the valuable results obtained.

PHOTOGRAPHIC REGISTRATION OF MAGNETIC PHENOMENA.

The *Gentleman's Magazine* of the present month has an interesting article on the Influence of Magnetic Phenomena, from which we extract a well-stated account of the self-registering operations at Greenwich Observatory.

In a magnetic observatory there are employed three needles, for the purpose of ascertaining the varying magnitude of the terrestrial magnetic forces in all directions. Although called needles, these instruments are really steel bars, some two feet, more or less, in length, and thick and broad. One is suspended by a silken skein in the magnetic meridian, and shows by its gentle oscillations the changes in the *declination*, or compass bearing. Another is partially restrained by two silken suspending cords in a position at right angles to the former, and its movements, in opposition to its ties, show the continual changes in the earth's *horizontal* magnetic force. A third is nicely balanced on knife edges, like a scale beam: its stately vibrations exhibit the varying intensity of the earth's force in a *vertical* direction. Now usually, these needles, although in constant motion, do not twist more than about half a degree from their normal position in the course of a day. Thunders may roll over them and lightnings flash in their vicinity, yet do they take no heed: the tempest is not their master; but gently, almost imperceptibly, they swerve and bow, in obedience to powers whose seat is in the bosom of the earth beneath them.

But let an auroral glimmer show itself; let the "merry maidens," as the polar lights are somewhere called, disport themselves even out of sight of the magnet watcher, and then will the needles run wild. Like a frightened thing of life, they quiver and shake, and wander fitfully and far beyond their wonted bounds of oscillation. As the luminosity overhead intensifies, they increase the amplitude of their movements; as it alters its phase, they change their direction. When the aurora is at its height, they are in the greatest consternation; when it dies away, their agitation subsides. There was a time when the observation of these magnetic disturbances was a tediously laborious task. The magnets carried small mirrors attached to their suspension-fibres, and graduated scales were fixed at a distance, and observed in the mirrors by the aid of telescopes. The swinging of the mirror brought to view different parts of the scale, and thus the magnet's movements were read and measured. Hour after hour the eye was enslaved, alternately reading the scale indications of the three needles. It was hard work—all watching is—but this was severer than any other vigil keeping, because there was no expectancy to leaven it. The patience of the spell-bound alchemist has been praised; the lonely vigilance of pilot and sentinel have been sung; but the true picture of solitary, hopeless watching would be that of an observer counting clock-beats through a night, and minute by minute peering at and jotting down the reflected oscillations of a compass needle.

Mais nous avons changé tout cela. Photography is now the constant and untiring observer. One of the prettiest, perhaps the prettiest of all, of the applications of the light-drawing process, is that to the automatic registration of the movements of delicate instruments such as magnets and galvanometer needles. Well-nigh all meteorological instruments are now made to record their own actions; but some of these are moved by forces so strong that they can mark their course mechanically, by pencil upon paper. For instance, the gyrations of a wind-vane are forcible enough to rub a marking-point upon a traversing-card: the pressure of wind upon a plate, and the weight of a column of mercury in a barometer tube, are sufficient to move pencils, and make them score their variations. The friction of the marker is not felt in these cases. But when we come to magnets whose movements can be arrested by a cob-web, mechanical tracing is out of the question. Here photography steps in. By fixing a concave mirror to the magnet, a spot of light from a neighbouring gas-flame is formed at a short distance from the reflector; and every tiny twist of the bar is rendered visible by a displacement of the light-spot. If, then, a sheet of sensitive paper be placed to receive the spot, and made by clockwork to travel slowly in a direction transverse to that of the magnet's swing, it will be impressed at every instant with the shifting beam, and there will be produced a wavy or zig-zag line, which will be, in effect, the *trail* of the magnet.

Thus do the three needles of a modern magnetic observatory perpetually observe themselves. Every day sheets of paper are set before them, and removed on the morrow, bearing the unerring record of their twenty-four hours' watch. And when a great aurora has shown itself, the traces are very beautiful. Now the line will bend into a gentle curve; then it will be jagged like a saw; anon, it will fly away to right or to left for a few minutes, forming the outline of a graceful spire; presently, it will make an excursion beyond the limits of the sheet, not to return for an hour or more. The larger fluctuations are common to all the traces; for the needles, in their wanderings, keep step to some extent one with the other, one force, variable in intensity, acting upon them all alike, and each showing what is the action in that particular direction in which it is constrained to move.

The disturbance of April last was a very extraordinary one: it began at about noon on the 15th, and ended at about three o'clock on the following morning. It seems tolerably certain, therefore, that the aurora, although not visible—from daylight on the one hand, and cloudy weather on the other—during the whole interval, commenced and ended at those times. As yet comparison has not been made between the magnetic movements and the changes in the auroral display; if this is done, no doubt it will be found, as it has been in other cases, that the flashings, the tremors, and varying intensities of the polar light are all identifiable with marked deflections of the magnetized bars, which will doubtless be found to have exhibited themselves wherever on the earth registers have been secured.

So it has come to be proved that there is an intimate relation between auroræ and the earth's magnetism. But this is not the only curious relation. In the early days of electric telegraphs it was found that upon occasions the wires became the media of mysterious currents that traversed them in various directions, sometimes opposing and sometimes augmenting the currents from the batteries by which the lines were worked, and sometimes putting a stop to telegraphic operations altogether. As these currents were obviously generated in the earth, they came to be called "earth currents." In course of time, when electric communications extended far and wide, and anomalous behaviours of the speaking instruments were carefully chronicled, it was recognized that those capricious earth currents showed themselves simultaneously with the magnetic disturbances I have been alluding to. By degrees the matter forced itself into importance; and at length the Astronomer-Royal, who had been for some fifteen years registering magnet movements by photography, determined to apply the same system of record to two delicate galvanometers placed in the circuit of a pair of telegraph wires specially erected for the purpose in two directions a right angle apart; one line having earth connections at Croydon and Greenwich, the other at Dartford and Greenwich. By this arrangement electric currents coursing the earth's surface from north to south and from east to west were captured, and caused to reflect the galvanometer needles, and by this deflection to register their varying strength upon a photographic sheet, just as the great magnets recorded the changing magnetic forces which acted upon them.

For four years this registration has now been incessantly maintained at Greenwich; it has as yet no rival in the world; and it has been found that every remarkable magnetic storm is accompanied by a violent disturbance of the galvanometers; and, moreover, that each change of direction of the magnets is marked by a corresponding change in the swing of these needles: the movements are synchronous and similar as regards the direction in which the disturbing force acts. The great magnets have certain small movements which are diurnal—that is to say, recurring every day—and so also have the earth current needles. These have not yet been sufficiently examined to establish a similarity; but it is determined, beyond doubt, that the great magnetic disturbances are either caused by, or, as it were, by a strange marriage, related to, the spontaneous galvanic currents generated in or traversing through the earth's crust.

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ON ALKALINE WET PROCESSES.

BY VALENTINE BLANCHARD.*

Some five years ago I announced that after the treatment of an old bath with carbonate of soda followed by exposure to sunlight, the after addition of acid was not necessary. I then stated my belief that the most exalted state of sensitiveness would probably be produced by an alkaline method of working. Mr. Sutton at that time took up the cudgels against me, and pointed out that carbonate of silver was insoluble in water, and therefore the bath became only neutral, not acid. I pointed out, in reply, that as nitrate of ammonia would be formed in an old bath, and as carbonate of silver was soluble in a solution of it, the facts were somewhat against him. Since then I have found, after a lengthened experience, that a bath treated with carbonate of soda was not only better without acid, but that the addition of it frequently produced fog in a greater degree, instead of curing it. Occasions have, of course, arisen when the addition of a considerable quantity of acid has been necessary to secure a result, when some inexplicable fickleness has put all wrong; I have, however, been compelled to take the earliest opportunity to remove the acid, for the resulting negatives have been poor in quality; in fact, totally unlike the creamy dense ones common in the normal bath.

Mr. McLachlan's experiments, running in some measure parallel with my own, led me to resort to oxide of silver, which was for many years my favourite method for neutralizing acidity in the silver bath.

Instead of assuming, however, that the addition of a few drops of weak acid was necessary, I determined to try other methods for the removal of the fog which resulted on the trial of a plate after the foregoing treatment. Instead of adding acid, therefore, I employed a collodion in which ammonium predominated over cadmium in the bromo-iodizer. As the collodion employed was quite colourless, I was much surprised, after a few trial plates, to find that in each succeeding plate fog became less apparent, until, after a few trials, a total absence of it resulted.

In order that these facts may be verified by others, I may mention that on trying a collodion in which iodide of cadmium predominated, a deposit of total obscurity was the result, without the slightest trace of an image. On testing the bath with litmus paper an unmistakeable alkaline reaction was apparent. Recently carrying my experiments further—being led to do so, I must confess, by Mr. Sutton's announcements in a contemporary—I found that on the application of an iron developer containing one ounce sat. solution of iron and half ounce of glycerine to twenty ounces of water, and with no acid at all, I secured an image with a much shorter exposure than that needed when employing the ordinary acid method. The resulting image was thin, and extremely powdery, being easily rubbed off when touched with the finger, and the shadows were slightly veiled; but with the addition of silver and a renewal of development the image acquired intensity with great avidity.

The colour of the deposit was very peculiar, being quite unlike that we are accustomed to see in the ordinary method of working. I do not at present look upon the results as equal to the old ones, and wish it to be borne in mind that the developer will rapidly decompose, and, therefore, can only be prepared in small quantities. It is undoubtedly most desirable that the most rapid methods of working should be sought for, and I feel assured that a little hard work done by experimentalists in this direction would produce results at present scarcely dreamed of by the great mass of photographers.

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[*] *The Photographic Journal.*

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Correspondence.

PRINTING ON IVORY.

Sir,—"An Old Miniature Painter and Photographer," in last week's News, takes exception to any silver printing process on ivory. If it is not presuming too much, I may be able to give him a hint, though I do not suppose it is new. Indeed, what is new in photography? However, it may be worth repeating.

Having been engaged with a friend, likewise an old miniature painter, two or three years ago, in striving to get good results on ivory, after many failures—of which one was veneering it on a print, as "Old Miniature Painter" suggests—we found the following process best for keeping the ivory as pure as possible:—

Having prepared the tablet with pumice-stone, &c., take a two or three-inch fitch tool, and coat the back and slightly round the front edge with pure albumen. When dry, coat it on the front with collodion prepared thus (any good sample will do uniodized): Put one drop of a saturated solution of common salt to every one of collodion. Having coated the tablet, let it dry; then, with a clean fitch, brush it over with a solution of silver at least eighty grains to the ounce; stronger if desired. When again dry, print rather deep, wash, tone, &c., the same as paper prints. I must differ with one point I have read on the subject in your Journal, viz., as to fixing in warm hypo. I use the hypo as strong as possible, but let it be cool before immersing the print. Fix for about twenty minutes or half an hour, then thoroughly wash. When dry, take a little ether, and rub off the collodion. The image will be found all that is desired underneath.

I fancy I hear some lazy photo say, "What a deal of trouble!" But look at the result: the albumen on the back and edge protects the ivory from the toning, &c., for we found it so sensitive to stain that we tried varnish; but even that spoilt the colour, besides peeling off in the various processes.

I feel I have not, perhaps, expressed myself as briefly as I might, but not seeing it mentioned in any of your articles to protect the back, I thought the hint might be useful to some one.—Yours respectfully, A Young Photo.

Liverpool, September 15th, 1869.

PS.—It is particularly desirable that the ivory should not be heated in any part of the process, as heat invariably turns it yellow and makes it brittle.

PHOTO-CRAYONS, AND PORTRAITURE ON IVORY.

Sir,—I acknowledge, with thanks, your politeness in publishing my former letter, as also the applicability of your editorial remarks thereon—in some degree.

Of course there could be no want of "drawing" in a photo-crayon portrait; but in all else I hold to my opinion, and am confirmed in it by that of many other artists, the more especially as I have just seen, in Sheffield (where a ten days' visit prevented me from seeing the Photographic News), two of Mr. Sarony's pictures, which were even more "muzzy" than those exhibited in London. Indeed, I can only suppose one further degradation to photography, and that is one suggested by a young lady, who proposed working a portrait in *Berlin wool* upon a photographic under-stratum.

As regards photography on ivory, there can be no serious objection where silver is not employed; or even where it is employed, if the deleterious chemical be entirely eliminated. Photographs may be taken on any surface not greasy. A photographer in the New Cut long favoured his customers with the choice of portraits on the toes of their boots or the crowns of their hats (transfers, of course). But the real use of photography in combination with ivory is to be found in the process named by myself, whereby all the advantages of an ivory surface are preserved without any counterbalance, a competent miniature painter being able to retain the likeness, while he superadds all the resources of an artist in respect to colour, delicacy, refinement, and even flattery, if it be so chosen.—I have the honour to be, sir, your obedient servant, An Old Miniature Painter.

Flagstaff Villa, Aldershot.

[We can still only conclude that our correspondent is forming an opinion of photo-crayons from a sight of some very imperfect specimens. Should he be in London, and call upon us, we shall have pleasure in showing him some an examination of which, we are satisfied, will change his opinion. We may add, that another letter, just received, from an exceedingly able and intelligent photographer, speaking of the photo-crayons, says, "I think they form one of the greatest strides the art has made towards the artist's domain. The simplicity of the means employed is no drawback to their value."—Ed.]

SEA GULLS.

Sir,—Your contributor, the "Old Photographer," appears to have been pleased with, and greatly astonished at, the wonderful "instantaneous" picture recently published by Messrs. Robinson and Cherrill, entitled, "Sea Gulls," which he evidently believes to be, as stated, a genuine "photograph from nature, containing rocks, sea, sky, and about half-a-hundred birds on the wing." With this impression on his mind, it is natural he should wish that the clever operators would oblige their brother photographers with an outline of their mode of working to produce so extraordinary a print, and he gives them a polite hint to do so. Was the good old gentleman simple enough to imagine they would comply with his request? The secret must be a very valuable one—a veritable gold mine to an industrious firm like that at Tunbridge Wells—and no doubt it will be soon covered by a patent, and for that we must wait. Instead of the desired information, we have been favoured with a comical letter, concluding with a remark as to the possibility of taking a picture in less than no time, if we knew how. Sir, I am only an amateur, though of some years standing, and may be as ignorant of photographic "dodges" as George the Third was of making "apple dumplings," but I venture to lay claim to a little common sense.

In the exercise of this very useful article, I have arrived at the conclusion that the gulls were *not* taken from nature at all. For many reasons it is not necessary to mention, I believe it to have been impossible. I assert this with the greatest confidence, notwithstanding I do not profess to be a "very intelligent printer."

The "Old Photographer" has been "*gulled*." Within certain limits I do not object to composition printing; but I do protest against the public being imposed upon by such so-called "instantaneous pictures." I may be told that as the birds are represented in the picture they could only have been taken in the camera by some very rapid process—probably by the new collodion, &c., of Mr. Sutton; if not, I may be required to say by what other device a flock of sea gulls could be impressed upon the plate. My reply, in such a case, would be, they were *painted upon the negative*, the whites being laid upon the film, the blacks scraped out. I feel quite proud of the discovery, and as I am the first to publish, you will, Mr. Editor, give me the credit, justly my due, for an "instantaneous" method of photographing birds of every feather, from gulls to larks. Please to call it the Salisbury Plain dodge, from the place of my residence.—I remain, &c., J. H. Johnson.

The Vicarage, Tilshead.

[The "good old gentleman" who contributes "Echoes" to our pages monthly is doubtless very sanguine and free from cynical unbelief for his years, retaining in age much of the freshness and vigour of youth; but his great experience, and an opportunity of examining the picture, have prevented him from falling into the error involved in our correspondent's conjecture, which has evidently been made without having seen the picture. Whatever method may have been employed in producing the gulls, it is perfectly clear to any capable observer that they are not painted in. "Who can paint like nature?" If a method could be devised and worked of painting in lights and *scratching out shadows* so as to produce effects perfectly harmonizing with true photographic gradation, and that to the extent required in fifty birds, the achievement would be as great or greater than that of taking an instantaneous photograph of a flock of gulls in their flight. Nevertheless, let some of our readers try the experiment. We shall have pleasure in reporting faithfully on the result.—Ed.]

ADHESIVE MOUNTS, PRINTING-IN "BABY."

Dear Sir,—I have tried the experiment. How to make the mounts is the mount-maker's affair. The mount may be covered all over one side, and then the picture could be any size, and put where you like; only be careful not to put them on too wet, and there will be no smears. I only throw out the idea.

Please suggest to "Protagoras," the next time he takes a group, and "they are all moved but baby," and in the next plate "they are all still but baby," to print one of each negative, cut the still baby out, stick it over the moved baby in negative, and on negative No. 2 print, and he will have a print with a white space, on which he can print the still baby on No. 1 negative.—Yours, H. S.

PS.—Perhaps "Brown" may have some objection to this also.

109, *Western Road, Brighton, September* 19*th*, 1869.

MR. SUTTON'S DISCOVERIES.

Sir,—Mr. Sutton, referring to my recent letter pointing out his strange forgetfulness, or stranger want of candour, in claiming the use of the alkaline gelatine process as his own discovery, although he had published it a few years before as Mr. Bartholomew's, and at that time warned his readers against it, admits that be had "forgotten all about the matter." He nevertheless seems angry that the circumstance should have been pointed out to him, and sneeringly observes that he "could tell even a 'very old photographer' many curious things of which he is probably not aware in the common wet process." I do not doubt Mr. Sutton's capacity for telling curious things, but then curious things, to possess any value, should be true; and when he tells me that the ordinary process of producing negatives with bromo-iodized collodion, iron developer, and nitric acid in the bath, was either discovered or introduced by himself, I decline to believe him, for I know the statement to be untrue. I showed this in my former letter by reference to published records; but, instead of acknowledging his error, he simply repeats his claim, as though it had been neither doubted nor disproved. When he further tells me that "it is not generally that the pyrogallic acid answers exceedingly well with good bromo-iodized collodion, and a bath made with pure silver," he tells me about something which, although true, is not new; and if not generally known, it ought to be, as it has, to my knowledge, been repeatedly published in the Photographic News at a time when it was unknown to or denied by Mr. Sutton. When he tells me that Col. Stuart Wortley's instantaneous pictures were taken with Mr. Sutton's collodion, he tells something I must take leave to doubt, inasmuch as Col. Wortley himself states that they were produced by collodion prepared by himself with salts of lithium.

I presume that you, Mr. Editor, will deal with his unfair observations on your own part of the discussion. But I must be pardoned if I refer to one item in his remarks which it is probable you will scarcely stoop to notice. After quoting the well known line about bribing "his grandmother's reviler, the British," he says, "It is a long time since I offered any bribe to the Editor of the News." Now it certainly shows a "curious," and, moreover, an ugly proclivity in a journalist's mind, or a "curious" personal experience, that notions of bribing should be uppermost; but one thing is tolerably certain, namely, that if the notion of bribes were to be associated at all with the name of Mr. Sutton, no one would for a moment charge him with *giving* them.—I remain, sir, your obedient servant,

A Very Old Photographer.

[Our correspondent is in error in supposing that we have any intention of answering personal remarks; and as for discussion, there is nothing to discuss. Mr. Sutton is less grateful than he ought to be; but that is not matter for discussion. In the course of our duty to our readers, we described Mr. Sutton's proposed new process, and mentioned many things having an important bearing upon it which had either escaped his knowledge or his memory. We avoided any suggestion of the more damaging alternative that he knew, but failed from want of candour to acknowledge, certain things. He is neither grateful for the information nor the forbearance, but is disingenuous, and disposed to sneer. He seems to think that, being a very old journalist, he ought to have known all these things. That is easily admitted, but it is clear he did not. It is clear, on his own showing, that he forgets things, and leaves his books behind him, and when he publishes pamphlets under such circumstances be falls into error. We know very well the services of Mr. Sutton, and appreciate pretty accurately their exact extent and limit; and we have never underrated them, not even in spite of the reckless assertion and unscrupulous invective which have often disfigured them; and so far as the new process is concerned, we shall be glad, if it prove useful to photographers, to recognize his share in its initiation. Although we do not consider him an unimpeachable authority on the extent of his own discoveries, we may fairly concede his right to a knowledge of the processes of his own mind. In a discussion with another contemporary, he says: "The worst of competition in journalism is, that it breeds jealousy; and when once the green-eyed monster has got firmly seated on an editor's shoulders, away go all truthfulness and liberality, and he becomes a mischievous propagator of fiction." Thus Mr. Sutton: and who shall deny his right to speak from his own consciousness?—Ed.]

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Talk in the Studio.

Mr. Woodbury's Photo-Relief Process.—This process, in France as well as in this country, is now in steady commercial operation. Dr. Vogel, in his letter to the *Philapelphia Photographer*, says:—"The Woodbury process, which has been so long in an experimental state, is now worked practically by Goupel and Co., in Paris. They copy oil paintings, and I have received from them an edition of fifteen hundred prints for the *Mittheilungen*; the several proofs show, in regard to intensity and detail, some difference. The price is, unmounted, one hundred and sixty francs per thousand; mounted, they are twice as high. At present very little money is saved as compared with silver. The reason why the mounting increases the expenses so largely is, that the dampened prints for mounting are easily spoiled."

Waterproof Packing Paper.—A waterproof paper which may be found valuable for use in storing negatives is thus described in the *Stationer*:—"The paper must first be covered with a resinous liquid, then painted over with a solution of glue and soot, as, without this, the paper will later show blotches. After this is dried, the actual waterproof cloak is applied. This is prepared with two and a half ounces of powdered shellac dissolved in two pints of water, which is gradually brought to boil, and stirred until the substance is perfectly dissolved and softened, when gradually one-third ounce of powdered borax is added, until an intimate union of the substances takes place. The liquid is then left to cool, and, while still hot, any mineral colour may be added, such as lampblack, yellow ochre, red ochre, iron blue, or burnt umber, whereupon it is left to get entirely cold. It is then ready for use. The operation can be so quickly performed with a brush, that two women can prepare 3,000 feet in ten hours."

Transparent Paper.—A correspondent of the *Stationer*, making oiled paper by brushing sheets with boiled linseed oil, complains that when dry it looks covered with snow flakes. Another correspondent gives a hint which may be of use to some of our readers. He says it "should be brushed over *very sparingly* about every twenty sheets, and pressed tight in a stand ing press; after which take out, and 'shuffle' together before being pressed a second time; this will prevent the snow-flake appearance. Another: Steep sheets of suitable paper in a strong solution of gum arabic, and afterwards press each sheet between two dry sheets of similar paper, to take off the superfluity of the liquid. The three sheets will thus be converted."

Note on the Oxalate of Silver.—In "Gmelin's Handbook of Chemistry" (Watts's Translation) the statement occurs that oxalate of silver retains most obstinately two per cent. of water, and the impression is conveyed that this compound cannot be obtained in a state of dryness. Messrs. Thudichum and Wanklyn, having recently had occasion to prepare some of the oxalate and examine this question, have arrived at the conclusion that there is no particular difficulty in drying oxalate of silver (their analysis gave for the amount of silver only 0·13 per cent. less than the calculated proportion), and that consequently there could not be more than 0·2 per cent. of water left in the sample of oxalate examined by them.—*Journal of the Chemical Society.*

Glue which will Unite Polished Steel.—The following is a Turkish receipt for a cement used to fasten diamonds and other precious stones to metallic surfaces, and which is said to be capable of strongly uniting surfaces of polished steel, even when exposed to moisture. It is as follows:—Dissolve five or six bits of gum mastic, each the size of a large pea, in as much spirits of wine as will suffice to render it liquid. In another vessel dissolve in brandy as much isinglass, previously softened in water, as will make a two-ounce phial of strong glue, adding two small bits of gum ammoniac, which must be rubbed until dissolved. Then mix the whole with heat. Keep in a phial closely stopped. When it is to be used, set the phial in boiling water.—*The Stationer.*

To Correspondents.

_ Mr. Robinson's Work on "PICTORIAL EFFECT IN PHOTOGRAPHY" is now ready, in a handsome 4to volume, with numerous illustrations by various processes. Price 7s. 6d.

W. Magic.—A quarter-plate lens will answer for use in a magic lantern without any other lens, except, of course, the condenser. 2. The fact of your negatives being seriously reduced in density by the application of the varnish may be due to a variety of causes. A very porous collodion will often cause considerable reduction, inasmuch as the varnish thoroughly penetrates the film, and, of course, renders it more transparent. Sometimes it is due to the character of the negative, which may possess a loose powdery deposit of silver, and may have been insufficiently intensified to bear varnishing. Most negatives are a little reduced by being varnished, unless a very thin varnish be employed. When there is a tendency to this fault, the use of a thick varnish will increase it. If you add a little spirits of wine to the varnish it will decrease the tendency to this defect.

T. H. E.—If the dish be provided with a well-fitting lid or cover, so as to keep out dust and prevent excessive evaporation, the printing bath may be kept in the dish instead of returning it to the bottle. 2. A little discolouration is not of consequence in the bath, as the colour it communicates to the paper is removed in the hypo fixing bath. But there are various ways of removing the colour from the solution when it becomes very deep; the simplest is returning the solution to the bottle, and adding a little of a ten-grain solution of common salt, and shaking well. The chloride of silver formed will, of course, be precipitated, and will carry with it the colouring matter; and, after filtration, the solution will be clear. 3. The loss of colour by prints in the fixing bath is very common, but it occurs in greater degree with some samples of paper than others; and also more with prints from thin negatives, which only permit light printing, than with prints from dense negatives. As a rule, however, it is desirable to tone somewhat deeper in the gold bath than is required in the finished print, so as to allow for loss in the hypo bath.

A. Steckurn.—There is no work devoted entirely to the subject of enlargements. Many articles on the subject have appeared in the Photographic News, to which we shall have pleasure in referring you if you will state upon which method of enlarging you desire information, whether by means of enlarged negatives, by the solar camera, or by enlargement on collodion. You will find an article on the latter method in our pages a few weeks ago. We regret that we cannot undertake to answer queries of this kind by private letter.

X. Y. Z.—The difference in result in using a lens of longer focus on the same sized plate is very obvious, but whether it be an advantage or disadvantage depends entirely upon circumstances. The difference is, that all the objects will be rendered on a larger scale, and a less amount of subject will be included in the picture. This may sometimes be an advantage, and sometimes a disadvantage. The use of the longer focus may, under some circumstances, be an unqualified advantage. If, for instance, you have range enough to get a sufficient distance from the subject to include first the amount you desire in your plate, then the longer focus is best, because you can secure the same angle of subject, and also be certain of perfect definition up to the edges with a large stop. A lens of short focus covering a large plate is chiefly valuable in confined situations, where a large angle of subject is required to be embraced. On the whole, we should consider the lens of eight and a-half inches focus best for the seven and a-quarter plate.

X.—There are various modes of producing stereoscopic transparencies. They may be produced by printing, by superposition on dry plates, or they may be produced in the camera on wet collodion. We prefer the latter. You will find the method described in various articles. Our Year-Book for 1869 contains details of the operations. 2. There are various substitutes for ground glass for transparencies. A very good one consists of the varnish made of gum dammar in benzole, known as "crystal varnish," to each ounce of which a few grains of white wax have been added. A thin starch paste applied hot will produce a similar result. Zinc white added to mastic varnish, and applied with a "dabber," will produce a similar effect.

Vincent.—A correspondent informs us that the address of Mr. King is 5, Studd Street, Islington.

H.—Our correspondent suggests that in focussing dark interiors, a lighted candle might be employed instead of the wax vesta suggested by Mr. Bensa. The candle would, however, be much less likely to be found in the pocket of an assistant than the box of matches suggested. We ignore, in relation to a practical suggestion which he quite understands, our correspondent's attempt to make fun. H. is also smart, but unnecessarily severe, with another correspondent.

E. W., Junr. (Holloway).—We have devoted many articles to the construction of glass houses, and the management of light. Our various Year-Books contain much information on the subject, especially those for 1864, 1865, 1867. Mr. Robinson's articles occupy the greater part of the volume for last year. They have been amplified and rewritten, and are just now issued in a handsome volume with many illustrations, photographic and otherwise. We recommend common crown glass or sheet glass for glass houses. The white sheet glass is better at the outset, but it is more susceptible of change by the action of light, which tinges it with yellow, making it worse than the common glass. We regret that we have not time to answer letters containing photographic queries privately.

A. B.—Your collodion has been undergoing a gradual change or decomposition, which many collodions do with age, by which the film becomes soluble in alcohol, and therefore dissolves when the varnish is applied. A simple remedy consists in flooding the film, after fixing and washing, but before drying, with weak gum water or stale beer. This, when dry—especially the gum—will protect the film from the solvent action of the varnish.

J. S. W.—Dr. Curtis is attached as a medical officer of the United States army. The photographs, having been taken under government auspices, will not, we presume, be published for general sale. We have been favoured, by the kindness of Professor Morton, with a series of those taken by himself, and in these the disc is two inches in diameter.

Sutor.—Some of your queries render enquiry necessary. We will answer in our next.

G. Wardley.—Received. Thanks. In our next.

R. Slingsby (Lincoln).—Thanks. In our next.

Some reviews are compelled to stand over until our next.

Several Correspondents in our next.

Photographs Registered.

Mr. J. C. Clarke, Aldeburgh,
Photograph of F. S. Corrance, Esq., M.P.
Mr. J. Port, Stonehouse,
Eleven Photographs of Flower Wreaths.
Mr. W. Hector, Crediton,
Two Photographs Holy Street Mill.
Messrs. Winter and Son, Beverley,
Photograph of Beverley Minster.
Mr. H. Lord, Huddersfield,
Photograph of Denby Dale Viaduct.
Mr. R. Taylor, Chatham,
Three Photographs of Rev. A. McKinley.
Mr. A. Nicholls, Cambridge,
Two Photographs of Crocodile, &c.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 578.—October 1, 1869.

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A SUGGESTION FOR DISPENSING WITH ACID CONDITIONS IN THE WET PROCESS.

Effect of Viscous Solutions on Checking Chemical Reaction.

We promised in our last some observations on the possible means of rendering neutral or alkaline conditions in the wet process available with little risk. We may premise, at the outset, that as all the operations in producing photographic images consist in reducing the silver from its salts to a metallic state, there can be no doubt that, other things being equal, alkaline conditions are favourable to rapidity. For the present we do not deal with those exceptional conditions in which the presence of nitric acid in large proportion is deemed a necessity in certain rapid processes; we simply deal with the wet collodion process as usually worked. The great aim is to secure the greatest facility of reduction without fog, the greatest readiness for reduction which light has initiated without risk of reduction where light has not acted. If a bath and collodion, neutral or even alkaline, giving a film with the molecules of the sensitive salt in that tottering state of equilibrium which the slight impact of light disturbs sufficiently to determine the formation of an image, can be employed in conjunction with a developer which is sufficiently energetic to complete the action of light without causing reduction in the parts upon which light has not acted, there can be no doubt that a method more sensitive than that commonly in use may be secured.

The great difficulty in securing these conditions in the ordinary wet process consists in the tendency to general reduction and fog which attends the conjunction of an alkaline or neutral silver solution and an energetic developer. Abundance of some restraining agent in the developer has been the general remedy for this defect. It is not improbable that it is in some modification of the restraining agents that the solution of the difficulty involved in securing greater rapidity will be found. Without entering into disputed questions in relation to the formation of the invisible image, it may, without disputation, be assumed that the presence of an acid in the film tends to destroy that image. It is probable that the infinitesimal amount of silver reduced to form an image by the first action of light is at once eaten up by the nitric acid present, which is waiting, like a greedy monster, to seize upon any metallic base which may come near it. A prolonged exposure is necessary, therefore, to overcome this, and secure sufficient reduction to form an image which can be developed. If, therefore, a perfectly neutral silver solution be present, a developable image is doubtless formed with a much shorter exposure. But when a neutral silver bath is employed there is serious risk that the moment it comes into contact with a reducing agent general fog may be the result; and to avoid this a weak developer with abundance of an acid as a restraining agent must be used; and as the acid has a tendency to destroy the latent image, these conditions largely undo the advantages gained by the use of the neutral silver bath.

The problem is, then, to secure a means of using a quick collodion, a neutral bath, and a strong developer without a restraining agent—or, at least, without a restraining agent which shall have any tendency to destroy the latent image. The restraining agents hitherto chiefly used have depended on chemical action. The substitutes we propose—and our suggestion is on much experiment and observation—depend on physical action. We do not propose to interfere with the affinities upon which reduction depends, but to retard their operation. We propose to make use of the fact, which the experience of late years has abundantly illustrated, that *chemical action is materially retarded, although in no degree eventually destroyed, by the use of a viscous vehicle or medium for the solution of the bodies which produce such chemical action.* We will proceed to explain more fully.

Several years ago Mr. Blanchard mentioned to us that he found that he could add silver freely to an ordinary iron developer without producing any reduction, provided he added also a sufficient quantity of glycerine. The experiment, although often repeated by Mr. Blanchard, was not, from some difficulty in the way, carried into regular practice. In the article by that gentleman printed in our last he mentions the fact that, with the use of glycerine in the iron solution, he was able to develop a plate produced in a neutral bath without any acid whatever. We have repeatedly, as we have before recorded, dispensed with acid when using sugar, honey, &c., in the developer. Gelatine has for some years past been largely employed in iron developers, but, as it has generally been converted into glycocine, its action has been regarded as chemical rather than physical. In short, although various viscous substances have been employed in the developer, the *rationale* of their operations has not received attention, nor has the fact, until now, been noted that it is to the viscous nature of the medium checking the free movement of the molecules of the substances in solution, and so retarding, without destroying, chemical action, that the restraining action of many of the bodies is due. Our attention to this fact was first aroused by observing the reactions in the preparation of collodio-chloride of silver. When an aqueous solution of a chloride is added to an aqueous solution of nitrate of silver, the precipitation of chloride of silver is instantaneous; but when an alcoholic solution of a chloride is added to collodion in which nitrate of silver is in solution, the reaction between the salts is extremely slow; some seconds always elapse before there is any indication of the double decomposition: sometimes several minutes elapse before an appreciable formation of chloride of silver is apparent. By experiment, we have found the delay to be in the ratio of the thickness and viscous character of the collodion. With a thin, limpid sample, the reaction occurs in a few seconds; with a thick, glutinous collodion, several minutes must elapse. The same facts are observable in the preparation of gelatino-chloride of silver, in which, of course, only aqueous solutions are employed, but rendered viscous by the presence of gelatine.

It will easily be seen, then, that by using developing solutions rendered viscous by some neutral body a retarding influence on reduction is produced, without the use of a body like an acid, which has a destructive influence on the latent image. By such a neutral retarding body reduction is delayed without ultimately being prevented, so that time is given to effect the reduction which light has initiated, and so bring out the image before complete reduction of the neutral silver solution is effected, and facility is thus given for securing the rapidity involved in the use of neutral, or even slightly alkaline, solutions, without the risk of fog which has usually attended the existence of these conditions.

We may remark, in conclusion, that our observation of the effect of a viscous body in retarding chemical reactions in the case of collodio-chloride of silver led us to review all our experience with similar bodies in developing solutions, and induced further experiment. It had not been our intention to publish our observations on the subject until we were prepared, by further experiment, to give the results of various bodies employed. The publication of Mr. Blanchard's important communication as to his experience with neutral and alkaline conditions has induced us to give publicity at once to our observation of what may, we believe, become one of the most important conditions in the practice of development.

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SUBSTITUTE FOR YELLOW GLASS.

We have often insisted on the importance of abundance of light—or, rather, of illumination—in what is termed the "dark room," and every facility which conduces to securing that end we mark with interest. We recently called renewed attention to the adiactinic qualities of a solution of bisulphate of quinine as deserving further consideration and trial as a substitute for yellow glass, a comparatively thin screen or layer of the solution having proved, in the experiments of Professor Morren, efficient for that purpose.

Our friend Mr. Spiller, writing about the same period, on the same subject, refers, in an article we reproduce on another page, to Professor Morren's as a remarkable illustration of the persistent reiteration of a scientific error, adducing the researches of Mr. Crookes in 1853 as showing that the substance in question had very little power to arrest the chemical rays. We know Mr. Crookes to be a careful and capable experimentalist, and have the highest respect for the views of Mr. Spiller, but it is manifest that the subject requires further investigation. It is continually occurring in the history of science that accepted facts and recognized theories require re-examination or re-consideration, and that some trifling modifying element may entirely change conclusions. The record of Mr. Crookes's researches, being incidental rather than direct, does not enter into detail on the subject; but the evidence of more recent experiments does not, we think, bear out Mr. Spiller's conclusion that the quinine solution is very imperfectly adiactinic, and a screen consisting of the solution confined between plates of glass would be valuable only in the printing room.

Mr. Spiller assumes that the use of the quinine cell is a suggestion merely, which Professor Morren has not tried. This is an error. Professor Morren referred to the cell containing a layer of the solution five millimetres in thickness, not as a possibility, but as a fact, adding that it had proved of inestimable service to him in carrying out the exceedingly delicate experiments of Professor Tyndall, in connection with the action of sunlight on certain vapours. Our last contains a letter from Mr. Ford, a practical photographer, in which he states that he has used bisulphate of quinine solution as an adiactinic medium with perfect success in connection with sensitive collodion plates, an elegant application, but crucial test, consisting of a cap for the lens in which a cell containing this solution is inserted, permitting the focus to be obtained upon the sensitive plate *in situ*.

The subject is of sufficient importance, and the evidence sufficiently weighty, to demand further attention; and since a discrepancy exists between the conclusions of the past and the present, a careful re-examination is clearly necessary. Will Mr. Spiller undertake the investigation? There is no one more capable; none whose conclusions will be more trustworthy. The subject is entered on our own tablets amongst experiments to be tried or verified, but it must wait for opportunity. In the meantime, we shall be very glad if Mr. Spiller will investigate the subject with the care and skill which always characterize his research.

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ASTRONOMY AND PHOTOGRAPHY IN ENGLAND AND ELSEWHERE.

We have already laid before our readers tolerably full details of the unusually successful operations in America in securing photographic records of the late eclipse. Before us we have a series of collodion transparencies, and a set of paper prints from the negatives obtained, for which we are indebted to the courtesy of Professor Henry Morton, who had charge of the triple expedition. His description, which we have already published, of the operations, and of the results obtained, is so graphic and perfect that it leaves us nothing to add in regard to the prints before us. The paper series, twenty in number, gives a progressive history of the stages of the eclipse, from the first moment of contact to the last trace of obscuration on the opposite side. The photographs are literally perfect, without blemish of any kind, and, we should say, undoubtedly deserve the encomium which has been passed on them, to the effect that they form the most perfect photographic record of an eclipse ever yet taken. The images are, as our readers are aware, two inches in diameter, and exceedingly well defined, showing the irregularities of the moon's outline very clearly against the sun's disc. The sun spots are perfectly made out, no photographic spot or imperfection rendering doubtful the difference between technical blemishes in the picture and the markings on the sun himself. Of the five prints of the totality before us, four render the corona and prominences very excellently indeed, giving a perfect idea of the phenomena which have always excited so much interest amongst astronomers, but in reference to which so little until lately has been known. It is interesting to note that the well-known line of increased light, which is frequently seen in photographs in which a light and dark object are in immediate contact, is noticeable in all the prints of partial phases of the eclipse, the light of light being on the sun's disc where the dark edge of the moon is immediately in contact with it. Whether this is due to light reflected from the back of the plate, or to the tendency in development to increased reduction of silver on the edge of a light part in contact with a black, upon which silver is deposited, is uncertain; but it is curious that although undoubtedly due to a peculiarity of photographic action, it closely resembles the effect which the eye sees when light and dark bodies are thus brought into contact.

Whilst examining these examples of perfect photographic aid to science with great pleasure, we must confess that our satisfaction is marred by the mortifying contrast to this success presented by the failure of the English operations last year in India, where the photographic defects were sufficient to mar seriously the scientific value of the negatives obtained. Where a pinhole in a negative may possibly obliterate a sun spot, or suggest one which does not exist, or where an opaque marking in a critical part of the film may create Baily's beads where none exist, or prominences not found amongst those really surrounding the sun, spotless technical photography becomes of the most vital importance. In America this technical excellence was secured; in India it was wholly wanting. Whence, then, arose the difference? There are capable photographers in England as well as in America; but whilst in England the aid of photography is often sought by men of science with a kind of lofty contempt, as though no especial care or skill were necessary to render that aid valuable, in America photography was honoured as an agency which was to do yeoman's service in a great scientific observation, and men of weight and position in connection with photography were enlisted in the enterprise, to secure the highest success. Amongst the photographers selected by Professor Morton to assist him are many whose names we are personally familiar with as men of mark in the profession, men whom we find active at societies, and contributors to photographic literature; and all these services are secured gratuitously, the best men in the art gladly aiding in rendering it available on an occasion so special in its relation to the advancement of the science of light. Photography, having been duly honoured, repays the tribute with perfect results. We regret to say that in this country no such steps appear at any time to have been taken; no specific aid has been sought from authorities in the art; no reports of scientific applications of science are made to photographic societies, or photographic journals. But, although the art is variously used by scientific men, the aid derived is often inefficient, simply because of the contemptuous regard in which the operations are too often held, as something mechanical and easy, and little more than labourer's work.

Whilst referring to this subject, we think the occasion is fitting for making another protest. An establishment is maintained at Kew at the cost of the British Association, where, in accordance with the suggestion of Sir John Herschel, photographs of the sun are made every day for comparative observation, in promotion of the study of the science of the sun. We have the strongest reason to fear that the contemptuous indifference to which we have referred is in operation here to the serious detriment of the value of the results produced. Some months ago a capable photographic friend visited this establishment, and had opportunity of learning pretty fully the mode in which the photography was conducted. The account he gave us of the operations was most depressing and disheartening, and we felt a sense of humiliation when we read, in the last Kew Report of the British Association, the statement that a gentleman from Russia had been to Kew during the year, to learn the mode of conducting the photo-heliographic observations. The process our friend saw in operation was one which, for commercial photographic purposes, has been abandoned for years. Simply iodized collodion and pyrogallic acid development were used; streaks in the direction of the dip seemed almost a normal condition; the process being slow, a large aperture in the lens was rendered necessary, and the use of a large aperture marred marginal definition. On enquiry, he learnt that some attempt had been made to render available the improvements in the art, but, being made under unsuitable conditions and without the aid of an experienced photographer, the attempt, being unsuccessful, was abandoned.

We have little hope that matters will be mended without specific personal exertion; but until the right man arrives to use personal effort, we feel it our duty to point out this imperfect appreciation of photography and the imperfect results which spring from it, and to enter our protest against them.

BI-COLOURED STEREOSCOPIC VIEWS.

Col. Sir Henry James has addressed the following letter to the *Athenæum*:—

If the following method of colouring stereoscopic views is new, which, as far as I know, it is, I think it will interest your readers to be made acquainted with it. In the stereoscopic views, one image of the view is superposed on the other, and produces the effect of relief; and it occurred to me that the colours of the views might be made to combine. If we tinted one of the views with a transparent colour, such as a tint of cobalt blue, and the other with a tint of carmine or lake, we should have the combination of these colours in the stereoscope, viz., a purple tint; and so with regard to the colours to produce the various shades of green, brown, &c. The colours thus employed produce remarkable effects by their transparency; and to see a view first with one eye in one set of tints, and then with the other in a different set of tints, and then with both eyes to see a third and a differently-coloured picture, is an optical effect as instructive as it is amusing. We, in fact, combine the colours in the eyes instead of the colour-cups. This is so very obvious a method of colouring stereoscopic views that I can hardly imagine it has not been tried before, and yet I can scarcely fancy that it has been, and that I should not have heard of it and seen some specimens of it.

The method in question has been tried before, and described, and patented. Thirteen years ago it was patented by Mr. Harmer, and at that time we stated, in the Journal of the Photographic Society, that we had coloured stereographs in that manner for years. As Col. James remarks, the effect is very pretty and interesting, and it is somewhat surprising that it has not been more frequently practised. But the records of a purely technical operation relating to photographs would scarcely have been found in a literary journal like that to which Col. James now communicates the method which is to him a novelty. To give due publicity to a fact relating to photography, Col. James would have done well in communicating it to a photographic journal.

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Foreign Miscellanea.

According to the *Photographische Archiv*, photo-mechanical printing processes are springing up on all sides. Some very fine prints have been produced by M. Obernetter, of Munich, and by MM. Neumeier and Rattmeyer, of the same town. Messrs. Ohm and Grossman, of Berlin, are also employed in elaborating a process, invented, we believe, by M. Gehmoser, which promises to be fairly successful. MM. Neumeier and Rattmeyer do not propose to patent their method, but, in lieu thereof, to give instructions in the manipulations, both at Berlin and Vienna, in consideration of a certain fixed honorarium.

M. Grasshoff, the well-known artist photographer of Berlin, recommends the following formula for varnishing pictures destined to be retouched by the pencil; viz.:—

Absolute alcohol	60 parts
Powdered sandarac...	10 „
Camphor, broken up small... ...	2 „
Venetian turpentine	4 „
Oil of lavender	3 „

This compound is diluted with a more or less quantity of spirits of wine before use.

M. Despaquis suggests a new application of the carbon process. He obtains a mould and counter-mould from the gelatine image upon glass, and from these produces, by means of the electrotype process, two *facsimiles*, one in relief, and the other in *intaglio*. With the aid of a stamp he is then enabled to impress the design, either portrait or landscape, upon paper in the manner of an ordinary embossing press.*

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* A method closely analogous to this, but simpler, has already been worked out by Mr. Woodbury, and, if we are not mistaken, patented.—Ed. Photo. News.

A new book treating of photo-enamels is shortly expected from the pen of M. de Lucy, who proposes to detail the various manipulations employed by him during the last few years with great success.

At the last meeting of the French Photographic Society, M. Loewe exhibited a collection of enlarged pictures obtained by means of prints from ordinary negatives, which are retouched with a fatty ink, and then transformed into litho-photographs or typographical prints.

At Altona another photographic exhibition has been instituted, the exhibitors being mostly photographers in the vicinity and in North Germany. The *Reform*, a Hamburg paper, speaks in high praise of the collection, more especially of some reproductions in carbon of antique drawings and cartoons of the old masters. The giant pictures of Kaulbach, reproduced by M. Bruckmann, of Dresden, are among the most successful results of this kind.

The addition of one and a-half per cent. of ether to the hyposulphite fixing bath is stated to be a very effective means of preventing the formation of bubbles upon the surface of albuminized paper.

The Hanfstaengel permanent photographic exhibition, to which we alluded on a previous occasion, has just been opened in Berlin.

The French Photographic Society have postponed their sittings until November next.

Dr. Vogel is suffering from indisposition, and has been unable, therefore, to preside over the recent meetings of the new society at Berlin. For the same reason he was, unfortunately, prevented from assisting the American expedition in photographing the recent solar eclipse.

The Boston papers speak in high terms of the exhibition in that town. The productions of Messrs. Robinson and Cherrill have the honour of being first alluded to, and then follow laudatory remarks upon the work of Adam-Salomon and Reutlinger of Paris, Lœscher and Petsch and Milster of Berlin, Vogel, Bruckmau, Wilson of Aberdeen, Constant of Lausanne, &c.

The eminent physicist, Dr. de la Rive, of Geneva, has published a critique on M. Becquerel's work, entitled "La Lumière, ses Causes et ses Effets." The essay, which is published in the "Archives des Sciences Physiques," enlarges upon the care and attention which M. Becquerel has exercised in the preparation of his volume.

The *Mittheilungen* and *Correspondenz* have both issued presentation prints of the Albert process. With the latter a portrait and a reproduction of a painting have been given, while with the former was distributed a carte-de-visite similar to the one enclosed in the News.

M. Hinrichsen, of Kiel, describes, in the *Mittheilungen*, his method of retouching, which presents, however, but few points of novelty.

M. Beyrich, a well-known photographer of Berlin, and, with Dr. Vogel, one of the chief supporters of the New Society, has just died.

Grasshoff's *Retouche von Photographieen* has reached a second edition.

Dr. Van Monckhoven is occupied upon researches undertaken with a view to devise a good artificial light for photographic purposes. Oxide of titanium will probably be the substance fixed upon; but experiments are necessary to determine the best methods of preparing and burning the same. The learned doctor has also used, with some success, a mixture of ordinary coal gas with oxygen, the combustion of which takes place in a simple apparatus devised for the purpose.

Two novel photo-electrotype processes are said to be forthcoming in Vienna, the one invented by M. Mariot, of Gratz, and the other by the Director of the Imperial Geographical Institute, Colonel Schopf.

Critical Notices.

PICTORIAL EFFECT IN PHOTOGRAPHY: Being Hints on Composition and Chiaroscuro for Photographers. To which is added a Chapter on Combination Printing. By H. P. Robinson. (London: Piper and Carter, and Marion and Co.)

Most of our readers are familiar with the lessons on the application of the principles of art to the practice of photography which Mr. Robinson contributed to our pages during last year. The volume before us consists of these lessons revised, in many instances re-written, considerably amplified, and often freshly illustrated. It would, perhaps, be somewhat out of place here to enter into warm encomium on matter which had originally appeared in our pages. We may say, however, with propriety, that we knew, when that series was commenced, Mr. Robinson's large acquaintance with the principles of art, and that more than most men he had devoted himself with much success to their practical photographic application; and by the time they were concluded our readers knew the clearness, simplicity, and force with which these lessons to be taught were conveyed. A careful and thoughtful study of these lessons, and constant reference, cannot fail to improve the art qualities of any photographer's work. We might say much more; but beyond this statement of our conviction we must be silent here.

We may explain, however, that the volume before us—a handsome quarto, printed on toned paper—has various illustrations not before issued. Amongst these is a very charming group of two children, admirably printed by Mr. Woodbury's photo-relief process. The object of this print is to illustrate a peculiar but effective mode of lighting, in which the greater part of the face is in mezzotint, just touched with light from the back and side, giving an exceedingly pleasing picture. An albuminized paper print is a good example of pose and rustic effect: a girl, going with a pitcher for water, stands amid a landscape, the foreground of which consists of real accessories, plants, ferns, &c., which are combined, with good natural effect, with a painted background. There are three prints from plates etched by Mr. Robinson himself; one of these being a well-drawn copy of Mr. Slingsby's pretty little photograph entitled "Rest." A fine example of Mr. Johnson's improved carbon process is from a reduced negative of Mr. Robinson's "Autumn." The especial object of this print is to illustrate a new chapter on Combination Printing, which cannot fail to be instructive to all interested in this branch of photography.

We notice with pleasure that the volume is dedicated to Dr. Diamond, as "one of the fathers of photography" and "one of the creators" of that art.

ON THE BEACH, CONWAY. By George Wardley.

The picture before us gained at the Exhibition of the Royal Cornwall Polytechnic Society a first silver medal, and rarely has a medal been better bestowed or more richly merited. On a plate 18 inches by 14 inches we have a view, as principal figure, of one of the "common objects of the sea-shore" in the shape of a fine ship, or, to be more technically exact, a fine brig, left high and dry by the receding tide. The vessel, which is absolutely the largest we have ever seen in a photograph, being nearly sixteen inches high, is most admirably rendered. The position is well chosen, giving a graceful view of the ship's lines, and every portion of the cordage is wonderfully made out. Other shore objects and the beach combine to form a capital foreground, the sea and distant foliage filling the middle distance and distance. A cleverly manipulated sky completes the picture, and adds materially to the sense of space and atmosphere and the general harmony of the picture, which is very perfect both as art and photography.

It is very interesting to remember, amid the novelties which have been advocated of late years in dry-plate photography, that this is by an old favorite process. "Of course," Mr. Wardley says in his note, "it is by the old Taupenot process."

THE SEARCH FOR A PUBLISHER; or, Counsels for a Young Author. Sixth Edition. (London: Provost and Co., Bishopsgate Street.)

This is a cleverly written book, full of excellent instruction for the inexperienced voyager on the perilous waters of authorship. The house by which it is published is one distinguished by its frequent issue of works with photographic plates. and, in a notice of the modes of book illustration, it calls especial attention to the value of photography for certain forms of illustration. A capital photograph forms the frontispiece of the present brochure.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Flattering Portraits—The Sea Gulls—Saving Clippings of Fixed Prints—Competition in Venice—Albert Prints—Woodbury's Process—French and English Portraitists—The Season.

The boasted truth of photography appears to have been rudely called into question by the humorous account given by the venerable Archdeacon Denison of the photograph which made him young and pretty. If he had given the photographer's name he would undoubtedly have secured the artist's bread for life—possibly a rapid fortune. Think of the rush of the young and plain, old and ugly, of both sexes, who would have hastened to the artist's studio to be made—at least, in a photograph, which *must* be correct—youthful in age, beautiful for ever! The common impression seems to be that this must have been a touched portrait, from which all life and character had been worked by the artist's pencil. Probably it was; although excessive exposure may sometimes be made to give a similarly softened effect to strongly marked features. The power to soften asperities, either by touching or exposure, is, in judicious hands, a valuable one; but what a pity that it is often used injudiciously, and produces tameness, insipidity. and loss of character, instead of a truthful rendering, with softened but not obliterated markings of life and character!

I see, in a recent letter in your pages, that the Rev. J. H. Johnson (not J. R. Johnson, of the carbon process, as the initials first made me fear it was), referring to my remarks on the sea-gull photograph, and the letter from Messrs. Robinson and Cherrill which my remarks elicited, states his conviction that the "good old gentleman" has been hoaxed. I thank him for the kindly terms in which he refers to what he doubtless regards as my somewhat fatuous credulity, evidently crediting me with a large amount of that charity which believeth all things. I am afraid I can scarcely take credit for all the easy, good-natured credulousness he attributes to me. I wish I could; credulity is often a happy, if not a very lofty, mental quality; but I am afraid that an intimate acquaintance of a quarter of a century with photography and photographers—noble as is the art, and worthy as many of its devotees—does not tend to increase a man's faith in each "dodge" or novelty produced in the art. But let all this pass. I may possibly be somewhat disappointed that the clever photographers who produced the picture do not enter into a detailed description of the mode in which the wonderful and charming picture was obtained, but I am scarcely surprised. The habit, which has grown of late years, of undervaluing ingenious novelties when they are announced does not encourage freedom of communication. One word in relation to the suggestion of my friendly critic of Tilshead Vicarage: Has he tried his own method? The practice of retouching negatives has acquired great perfection, but has any one seen a negative with shadows scratched out and lights drawn in, with the detailed gradation to render perfectly the plumage of a bird measuring across its outstretched wings not less than an inch, not to say a flight of fifty birds receding in due proportion of linear and aereal perspective, so as to harmonize with the large instantaneous picture of sea and clouds as these birds do? I assume that Mr. Johnson would not have entered into criticism without having seen the picture: will he state if he thinks, after carefully examining it again, that the thing is possible? Rousseau, in one of those singular bursts of candour which are occasionally found in his works, answers the assertion of some of the French philosophers that the evangelic narrative of the life of the Founder of Christianity was a fiction, a priest's fable, says that the author of such a fiction would be greater even than the hero he had created, and that it required greater credulity to believe in such creative fictional power than to believe in the authenticity of the narrative. Similarly, it strikes me, the artist who could paint such an effect upon a negative would be a much more capable man than if he could produce it from nature by the existing appliances of photography.

The question may be fairly asked—putting Mr. Robinson's badinage aside—Is it within the range of photographic possibility that such a flight of birds could be secured on a wet collodion plate? I think it is. The difficulty no one can doubt; the multitudinous chances against success everybody will admit; but still I think it is possible. I will not discuss the various ingenious dodges I have heard suggested to account for the result actually obtained; nor will I now consider how much the best optical appliances, great skill, and chemicals in good condition, might effect even on a sixteen by twelve plate. But is there necessarily any impossibility or insuperable difficulty, with a quick portrait lens and small plate, in securing such a negative, and producing a presentable result by enlargement The author might point to such a possibility, and exclaim, with Milton's fallen angel, "Of wiles more unexpert I boast not!" I do not say, by any means, that this picture was so produced, nor do I even suggest that I think that this was the method, but here is a possibility to consider. Of course much must, in any such case, be due to lucky chance in getting such a flight of birds before the camera, and to patience in watching for such chance with plate in the camera ready for exposure; but rare as the chance may be, it is not impossible. I regret to add, in connection with this subject, that I have heard that the negative was accidentally broken. If it owed its existence to some skilful dodge, it can, however, probably be repeated.

I noticed recently in your pages a very interesting communication from Mr. Duchochoix regarding the value of the cuttings from fixed prints. The estimate he gives of their value seems rather startling, and is doubtless well worthy of attention. But there is one unfortunate omission in the statement of details, which is important. It is a pity that Mr. Duchochoix did not state the weight of the clippings themselves, as a guide to what might be expected. I have never attempted to save such clippings myself; but I remember once hearing Mr. England say that waste fixed prints were worth fourpence per pound. Assuming this ratio of value, the cuttings of fixed prints during six months in Mr. Duchochoix's establishment must have amouted to nearly five hundredweight, a rather serious weight to accumulate in cuttings of fixed prints merely. I fancy, however, that there must be some discrepancy in the estimates of value, inasmuch as thirteen pounds of ashes could scarcely have represented about five hundred pounds of unburnt clippings. At any rate, it seems clear that such cuttings are worth saving, although I know that they are thrown away in many establishments. I am not sure, indeed, that in some cases still more valuable residues are not wasted.

Photographers reading the record of the sad state of prices to which competition has reduced photography in Venice, as recently recorded in your pages, will feel that in Venice, at least, they cannot afford to waste residues of any kind. A silver print, 14 by 10, mounted, for fifteen pence, seems an impossibility; but I have seen many of the prints, by Ponti and Naya, described by Mr. Thompson. The marvel is not only at the possibility, but that in many cases they are exceedingly fine photographs.

I presume that when processes like that of M. Albert come into general operation a still further reduction will be made, and photographs will eventually be sold, like ballads, at a penny a piece. I may here take opportunity of thanking you for the pretty example of Albert's process presented with last weeks News, and to express my hope that such a charming process may never be degraded by becoming a medium for the propagation of the cheap and nasty in photography. The impression I received was a somewhat dark one, beautifully modelled, but possessing, I thought, a trace of something like very fine lithographic grain. It is undoubtedly a beautiful and wonderful result, and for certain forms of photographic illustration will be invaluable.

I am very glad to see that a kindred process, which also owed its first introduction to the News—I mean Mr. Woodbury's process—is now steadily making commercial progress. I begin to see the works of the company in shop windows for sale, and I am informed that an establishment at Brompton is kept fully employed. The results I have recently seen have left scarcely anything to wish for. I have heard various comparisons made, within the last few days, as to the relative excellence of Woodbury prints and Alberttypes—as I presume the new pictures are to be termed. Whilst admitting the beauty of each, I have generally heard the matter concluded by the observation that Mr. Woodbury's prints were unquestionably more like photographs than the other, and would therefore be more readily accepted by the public as photographs. And I presume that this public acceptance is not quite an insignificant matter in the commercial estimate of the case.

I notice that Mr. Hooper proposes, as a problem for the solution of English portraitists, the question why so many persons get their portraits taken in France, or rather in Paris? That many do so, I suppose, there can be little doubt, and I do not think the reason is difficult to assign. In the first place, a general impression prevails that in all works of skill and taste the French producer surpasses the English producer; and I am afraid that the impression is in many respects a true one. As a whole, a French portrait generally has more pleasing qualities than an English one: pose, arrangement, tone, finish, and mounting—all, as a rule, bear evidences of taste. Of course some English portraitists excel some French portraitists; but the general impression of the general fact is, that taste prevails more in Paris than in London, and, as I have said, I am afraid it is true. If the problem put be not difficult to solve, it deserves pondering.

I am afraid that the season must have been a poor one for landscape photographers: the months have passed on without really bringing summer, and now winter seems close at hand again. Before I write the next "Echoes" many of the societies will have recommenced their meetings, and possibly the barrenness of photographic topics which has prevailed lately will have passed away.

MASKS AND FACES.

BY PROTAGORAS.

Part XIII.—I Get Downright Savage with "Brown."

"Well, 'Brown,' how about your 'babies'? I suppose you have a large family by this time. How is your 'company' getting on? You said it was to be a 'limited' one, and I expect it is *very* limited. Is the prospectus out yet?"

Brown.—"Babies—company—what are you talking about? Oh! I remember now; that bit of chaff I had with you the other night. You really didn't think I was serious, did you?"

Protagoras.—"Well, I certainly did. You were so hot on it that I thought it was one of your mad crotchets that you were going to try and work out. I am glad, for your sake, that it was only a bit of your fun. Tell me, 'Brown,' are you ever serious? for I really thought you were then."

Brown.—"Am I ever serious? Well, as seldom as possible. I hate being serious. All stupid people are serious."

Protagoras.—I don't agree with you there. I like to be serious."

Brown.—"I daresay you do; and if I were as serious as you, I should be just as stupid."

Protagoras.—"You are complimentary to-night, 'Brown.'"

Brown.—"No compliment, I assure you; only the bare truth."

Protagoras.—"'Brown,' you are the most cynical, disagreeable bear that I know. I suppose, then, that those denunciations of photographers you have indulged in so many times were all your fun."

Brown.—"Certainly not, if you allude to those discussions we have had, and where I gave you such an awful slashing."

Protagoras.—"Discussions! How can you call those discussions where you had all the say to yourself?"

Brown.—"If you are going to revive that old grievance, and give that elaborate defence you so often have promised, you had better begin at once, and make haste, too, for I am pretty nearly sick of it."

Protagoras.—"It's all very well for you to say you are sick of it, but you must remember there are two sides to every subject, and you have given only one."

Brown.—"Well, go on then; I'll listen, so long as you are reasonable."

Protagoras.—"I beg you will have patience also, and not interrupt me; you know I did not interrupt you."

Brown.—Interrupt? If you interrupted me once, you did twenty times. I could have said twice as much if you had let me."

Protagoras.—"Don't be so economical of the truth, "Brown,' don't. To begin at the beginning; you will admit that photography has been a grand discovery."

Brown.—"Every fool knows that; say something sensible, if you can."

Protagoras.—"You will admit that photography has made rapid strides since the days when Sir Humphrey Davy and Wedgwood first announced their crude discoveries."

Brown.—"Now you are going back to the dark ages—or, rather, the dark room ages; why don't you begin with Adam and Eve? I suppose you'll tell me directly that the original 'wet process' was discovered by Noah at the time of the deluge, when he was in the ark; that's genuine photographic archæology."

Protagoras.—"Don't sneer and scoff, 'Brown,' but listen. You cannot deny that photography has diffused itself wherever the blessings of civilization are known."

Brown.—"Oh, certainly; just like measles and the small-pox, they all go together."

Protagoras.—"Photography has been the means of diffusing the finest works of art among the people."

Brown.—"Certainly; and some of the diffusers—I call them pirates—have had to pay pretty stiff fines for the privilege; others are working it out in the goals. Mr. Graves had his eye on them."

Protagoras.—"I *will* have my say out, so don't sneer at me. I maintain that photography, by popularizing portraiture, has ministered to the purest and most holy feelings of humanity."

Brown.—"Pure and holy feelings! *Holy*-well Street feelings you mean? Didn't they make a jolly seizure the other day? Ministering to the feelings! And didn't the *ministers* catch it hot and strong too? I hope it will be a warning to them, and to those who took the negatives and made the prints."

Protagoras.—"'Brown,' you know as well as I do that I have no such thoughts in my mind, and that I invite you to make no such indelicate allusions. To the pure all things are pure."

Brown.—"Well, I can't help it if you fellows will do it; don't blame me. Do you not read your *Daily Telegraph*?"

Protagoras.—"I won't be put down by your sarcasm. I assert, fearless of denial, that photography has permeated every branch of society; that it has interwoven itself with almost all our wants and our pleasures; and that, figuratively speaking, there is scarcely anything in the heavens above, the earth beneath, or the waters under the earth, that photography has not profitably been associated with. Art, science, literature—are all assisted by its invaluable aid. It has become a part and parcel of modern existence, like railways, steam engines, printing presses, and telegraphy. It has created a new industry and a new literature; it is contributing to science, and illustrating and assisting art. Wherever civilized man is found, there also are the works of the camera. The grand old piles of architecture are perpetuated by it, and the most modern works are made known by its influence. It records, in its own unparalleled manner, the wondrous works of nature. It aspires to the sun, and tells the story of the wonderful changes going on during the recent remarkable eclipses. It soars even to the very stars, and helps to show their singular nature. It—

Brown.—"Excuse me, but you needn't go on any more in that line. I heard the whole story told the other night a good deal better than you can do it. I was going down the Great Northern Road, and I saw announced a lecture on photography at a school room. I went in, and heard such a glowing account. You would think the millennium had arrived, and the world was coming to an end, all through the wonders of photography. The parson of the parish was there with his wife and thirteen children. There was the curate also, and about fifteen parish pensioners, and myself. They began with a prayer, and ended with the doxology. It was the first photographic lecture I ever attended, and I shall take jolly good care it is the last. After enduring all that, you cannot expect I am going to listen to a sermon from you."

Protagoras.—"This is no sermon. It is only a fair statement of the good things the world has gained by that art that you ought to have been the last to disparage. It is but an attempt—"

Brown.—"Exactly. Right you are."

Protagoras.—"It is an attempt to show the true service rendered by the art, and by those who earn an honourable existence by its practice, in answer to your savage and depreciatory remarks. You have selected isolated cases, which all honourable minded men deplore, as if they were fair examples of the practice of the art. You have picked out the weakest instances you could find to vent your ill-natured spleen upon, while you have ignored the honourable practice as if it did not exist. You have poured out the phials of your wrath upon that you ought to have looked kindly on and given your indulgence to. You have vented your ill-natured venom on—"

Brown.—"I never knew, 'Protagoras,' you were such a master of the vulgar tongue before."

Protagoras.—"Oh, I can speak out when I like. I told you you should have it. I haven't half done yet; I mean to tell you—"

Brown.—"Beg pardon, but I mean to tell *you* that I have an appointment to meet three or four fellows to-night. I see you are good for the next hour and a half at least, and I really cannot wait. You can go on all the same; never mind my not being here; it won't make any difference. I am going to make arrangements for a trip to Switzerland. By-the-by, will you join us? I know they'll let you come in with us if I speak a good word for you, although you are a photographer, provided you don't bring any of your traps with you. Will you come?"

Protagoras.—"No, I won't. I am angry."

Brown.—"Very sorry. Never mind, old fellow; I'll come and see you when I return. Sha'n't be away more than a week or two. Pitch into me when I'm gone, and get it all over before I come back. Good bye!"

Protagoras.—"'Brown,' you're a brute."

QUININE AS A NON-ACTINIC MEDIUM.

BY JOHN SPILLER, F.C.S.

In the text of a paper on "Some Phenomena of Decomposition produced by Light," recently presented to the French Academy by Professor Morren, and reproduced in another column of this Journal, occurs a recommendation to employ a solution of the sulphate of quinine, in a kind of cell or trough constructed with parallel sides of glass plates separated from each other by an interval of about one-fifth of an inch, for the purpose of cutting off the active chemical rays from light entering the windows of the photographic laboratory. This suggestion, had it been practicable, would have furnished a means of developing collodion negatives under very favourable circumstances for examining the progress of the operation, and at once given the manipulator all the advantages of illumination by white light while engaged in further intensifying the first thin image upon the plate.

It is, however, somewhat remarkable to note the continual reiteration of this scientific error, which crops up periodically in the photographic journals, and only six months since was made the subject of special inquiry on the part of one of our correspondents. Three years ago a similar proposal originated with M. Obernetter, and a notice of the circumstance appeared in this journal at the time, under the attractive heading of "Suppression of Yellow Light in Photographic Rooms." The mode of applying the quinine salt in that instance consisted in mixing it with a little gum or dextrine, and painting it over white paper, which was then dried and laid against the panes of an ordinary glazed window. This scheme was said to have been adopted in the atelier of M. Albert; and it would be instructive to know whether its use is still continued. The assertions to which reference is now made are so completely at variance with Mr Crookes's published researches, that we can only account for the discrepancy by admitting the possibility of conducting some of the rougher operations in photography, such as the sensitizing of paper and tissues for printing, in the presence of a subdued and diffused white light, and that these operations are alone contemplated by those offering the suggestion. We have recently had an opportunity of inspecting the very instructive series of spectrum-photographs shown by Mr. Crookes at the Society's first public Exhibition in 1854, and described somewhat earlier in this Journal.* In order that we may the better convey the purport of Mr. Crookes's observations, we give here the description appended to the two photographs of the series which specifically bear upon the question before us: and it should be mentioned that the rays which affected the iodized and bromo-iodized plates had passed through a *strong* solution of quinine contained in a glass cell measuring *one inch* across—circumstances which seem far more severe to the experiment than the comparatively inadequate means employed by MM. Obernetter and Morren in their attempts to intercept all the chemically active rays.

Quoting from the official catalogue of 1854, the description stands thus:—

"Figs. 4 and 5. Photographs of the solar spectrum after having submitted it to the absorbing action of sulphate of quinine. The only rays which this substance allows to pass are those below the violet, limiting the photographic action in the case of iodide of silver (fig. 4) to a narrow band around the line G, about the centre of the indigo, and, in the case of bromide of silver (fig. 5), to the upper portion of the green, the blue, and indigo rays."

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* *Vide* vol. i. p. 98.

Thus, then, it would appear that there is a considerable diminution in the activity of the passing rays; so that for some applications, as in the windows of the printing department, it may be possible to rely upon the imperfect adiactinic character of the quinine medium, or employ, in conjunction with the organic salt, a comparatively pale yellow window curtain—but that for all the delicate operations connected with the production of collodion negatives the employment of a quinine cell as suggested (but apparently not tried) by Professor Morren would be altogether inadequate. The publication of the paper by the French Academy does not seem in this instance to have been preceded by any experimental verification on the part of those acting on the Commission; and it is now imperative that further evidence should be collected before the statements of M. Morren can be received, or steps taken with a view to the general adoption of this method of illuminating photographic laboratories. It should not be forgotten that a liquid medium thus employed in our windows will have to be protected from frost in cold weather, and must be as carefully guarded as the nitrate of silver dipping bath.

In connection with the employment of quinine in photography, it should be mentioned that the sulphate was used seven years ago in preference to tannin as a preservative by the late Mr. T. Barber, who communicated his experiments to the North London Society. We are not aware that the author recognized any specific optical advantages in the use of this salt; but the fact of his obtaining pictures proved that some of the actinic rays were allowed to pass.—*Photographic Journal.*

Recent Patents.

A PHOTO-LITHOGRAPHIC PRINTING PROCESS.

BY W. H. FISCHER.

The following invention was only provisionally specified. Its aim, from the brief description, seems to have been a method of printing analogous to that of Tessie du Motay and Herr Albert:—

I dissolve gelatine and gum arabic in the proportions of about thirty grains of gelatine and ten grains of gum arabic in one ounce of water, and add thereto about five grains of lump sugar. After filtering, I add one drachm of a saturated solution of bichrome of potass or bichrome of ammonia. The mixture is then ready to pour on the glass, slate, or metal which is to form the positive picture. After drying, the plate so prepared is placed under the negative so that the film side of the negative shall be in contact with the gelatine film. After a proper exposure, the picture on glass, slate, or metal, is ready for the printer, and is printed in an ordinary lithographic press, in the usual way employed by lithographic printers, and with their usual inks.

IMPROVEMENTS IN CARBON PRINTING.

BY J. R. JOHNSON.

Some of the improvements introduced by Mr. Johnson into carbon printing have already been explained in detail to our readers. His complete specification contains additional particulars and much matter which will afford valuable suggestion to the intelligent photographer, to whom we commend a careful study of the various plans proposed. He says:—

My invention consists of certain improvements in the operations by which photographic pictures in carbon or other pigments are obtained. These operations are usually as follow:—

1. The mixing of the pigment with gelatine or its analogue, and with sugar or its analogue, and with a bichromate to render the compound sensitive to light, by the action of which it becomes insoluble in warm water.

2. The spreading of the gelatine upon paper or other "support" to form a "tissue."

3. The mounting of the tissue, after it has been exposed to light, upon paper or other "support," for the purpose of development; that is, for the removal, by washing, of the gelatine which remains unacted upon by light, leaving that which has been acted upon and rendered insoluble to constitute the picture. If the picture be retained upon the paper or other support upon which it has been developed, it is called a permanent "support," and the images of the picture are then reversed. In this case it has been usual to employ albumen, coagulated by alcohol or by heat, and gelatine, rendered partially insoluble by the alums as the cementing material.

4. To avoid the objection of obtaining reversed pictures, it has been usual to mount the picture upon a "temporary support," in which case paper is prepared with an adhesive coating of india-rubber or other substance soluble in benzole, and the face of the gelatinous tissue, after exposure to light, is also coated with a solution of the same substances, and, when dry, they are brought together under heavy pressure to effect adhesion. The mounted tissue is then developed, the resulting reversed picture being supported upon the india-rubber paper. The picture thus obtained is then "mounted" upon or cemented to paper by means of gelatine, or gelatine rendered partially insoluble by the alums. When dry, the india-rubber paper is moistened at the back with benzole and may be then torn from the face of the print, which is left upon the permanent gelatine support, the images of the picture being thus brought into their correct or non-reversed position.

1. Now my first improvement consists of a new mode of treating the pigment to be used in the production of these pictures, and which is required for this purpose to be in the finest possible state of division, and has hitherto only been successfully used in a moist condition, fresh from the mill or grinder. If kept for some time after grinding, aggregation takes place among the particles of the pigment, and the results are then no longer of the same degree of perfection. A moist pigment, unless specially treated, is also of unequal density, and cannot be used conveniently to obtain definite shades of colour, equal portions of such pigment giving unequal depth of colour. I obviate this inconvenience by mixing thoroughly, by mechanical means, the finely ground pigments – black, red, or other colours —with gelatine and sugar; these being in much smaller proportion than that which is required for the production of the sensitive compound, say four parts of the gelatine and two of sugar to one part of the dry colour; but these proportions may be greatly varied; and I pour the mixture upon a slab or surface where it is allowed to set and dry. The sheet of prepared pigments is then cut up into leaves or cakes. I prepare, in the same manner, transparent or colourless sheets or cakes of the gelatine, or similar substance, mixed with its proper quantity of sugar or light material, and I form the tissue of variable tint by dissolving variable quantities of these—that is, of the prepared gelatinized pigment and of the transparent or colourless compound—and spreading the tissue compound so prepared upon paper, as is well understood, the result being definite, and the pigment being in its most perfect state of division; and by pigment I mean not only those pigments used in oil or water-colour painting, but those used for painting upon glass, enamel, and ceramic surfaces. In addition to the pigments just referred to, I also use dyes and other colouring matters, soluble and insoluble. I mix these also with gelatine and sugar, or their analogues, and dry them for the purpose of giving colour to the tissue compound.

2. My second improvement consists in a new method of making tissue in continuous lengths, and of modes of using the gelatine compound without the necessity of forming the ordinary tissue. I manufacture tissue in long or short lengths by rolling the paper as it leaves the mill upon a roller in a continuous sheet, and bringing it from such roller in contact with the surface of the pigmented gelatine solution by means of an endless band of canvas or other fabric stretched upon rollers, which band may conveniently rest upon the roller carrying the paper. When the endless band is set in motion it draws off the paper from the rollers without any tension upon the paper itself, and thus admits of indefinite lengths being made continuously instead of operating intermittently with single sheets or sheets of definite length made into endless bands, as has

heretofore been done; the length of which sheets is greatly limited by the small amount of tension which the paper when wet will bear. Instead of the endless band of canvas stretched upon rollers, a simple roller of wood or other material may be used. This is driven by hand or power while the long roll of paper rests upon it, the paper being thus unwound by the friction of the driven roller, instead of by the endless cloth, as in the former case, the principle being the same; that is, the paper is delivered to or brought in contact with the surface of the tissue compound in solution without any tension or strain upon the paper itself. Or I avoid the necessity of forming the ordinary gelatinous tissue with its support of porous paper by proceeding as follows:—I spread the gelatine compound upon a layer or film of wax, paraffin, or similar substance supported upon a plate of metal, japanned panel, oiled cloth, varnished paper, or other impermeable substance, and I expose this under a negative and attach the exposed face to another surface. I then warm the metal panel or other impermeable substance to soften the wax or its analogue. The metal panel or other impermeable substance may then be removed, leaving the gelatine layer attached to the support to which it has been cemented, and it is then subjected to the ordinary treatment. If the fatty matter employed to form the film be fusible at the temperature required for developing the picture, the support upon which the gelatine layer has been formed separates without any further application of heat, leaving that layer fully exposed to the action of the water. Or I spread the gelatine compound upon a layer or film of wax or similar material (which in this case must be infusible at the temperature at which the picture is developed) spread upon a transparent support of glass, and when dry I print through the glass by means of the camera, or by parallel rays, or by rays proceeding from a luminous point, and I develop the picture upon the glass as a temporary support. Or I place the layer or film of wax or similar substance upon the negative itself, and after exposure I develop it upon the negative, and transfer to a permanent support in the usual way. And here I would have it understood that I do not claim this mode of operating with the sensitive compound upon the negative or glass support, except so far as regards the intervening film of wax, which enables me to transfer the developed picture from the negative or other temporary glass support to its final support of paper or other material.

3. My third improvement consists of the substitution of resinous and other substances which may be rendered soluble in water, but which become insoluble when dry, for cementing the pigment picture to its permanent support in place of the substances hitherto used for this purpose, such as albumen or gelatine rendered only partially insoluble. The substances I prefer are colophony or pine resin, shell lac, or their analogues, dissolved in water, to which caustic, ammonia, or other substance having the like solvent property has been added. The new cements may be used either spread upon paper and brought in contact with the wetted tissue, or the paper and tissue may be moistened with water and then brought together in a solution of the cement, so as to expel air-bubbles and bring the two surfaces into contact with a thin layer of the cement between them, as described by Swan in the Year-Book of Photography, 1868, in respect to a compound of gelatine and chrome alum. When dry the adhesion is complete, and the mounted tissue may be developed as usual. I have assumed paper to be the permanent support, but other surfaces may be so employed, as glass, porcelain, or prepared canvas. And when glass is used as the permanent support it is obvious that the pictures are not reversed when seen through the glass either as transparencies or with a white backing behind them.

4. My fourth improvement consists of a new mode of obtaining photographic images in pigmented gelatine or its analogue upon plates of metal, glass, or other substance impermeable to water, which plates may be used either as permanent or temporary supports, dispensing in the latter case with the india-rubber paper heretofore used for this purpose. This improvement is based upon the observation that if the support be impermeable to water and the tissue be well exposed, no cementing material is necessary to effect the adhesion necessary for mounting the tissue upon its support, all that is necessary being the perfect exclusion of air between the moistened surface of the tissue impressed by light and the impermeable surface to receive the picture as its support. I effect this by wetting the tissue and laying it upon the metal or other surface, and sponging or rubbing the back of the printed tissue, so as to drive out air with the superfluous moisture, as in mounting a print upon card. To effect perfect and permanent adhesion, the surface of the glass or metal forming the supports must be chemically clean, particularly when such surface is polished. To avoid the necessity of thus cleaning the surface I occasionally cover the surface with a very thin layer of plain collodion, using for this purpose a collodion containing about one or two grains of cotton to the ounce of ether and alcohol forming the solvent. When the collodion is set, but not dry, I plunge it into water to wash off the solvents until the greasy appearance has ceased. I then lay upon the plate thus prepared the wetted tissue. When the picture is completed it adheres to the glass with great tenacity by surface adhesion only, even if such glass had had a slightly greasy or otherwise impure surface. Pictures thus mounted upon glass or metal as their permanent support may not only be used as pleasing pictures, but can be employed in various processes as a model or pattern to obtain casts or impressions, either by means of pressure, by the electrotype process, or by casting. The hardened gelatine picture, either negative or positive, or a plate of zinc, copper, or steel, may be also used as a resist, which enables us to etch the plate, or to gild it for the purpose of etching it subsequently, with the object of producing a plate in intaglio or relief, for the purpose of printing therefrom. When the plates of metal, glass, or other impermeable substance are used as temporary supports, such plates must have received some slight smear or coating of wax or other fatty body to prevent the absolute adhesion of the picture film. Instead of wax alone I find equal parts of wax and yellow resin dissolved in turpentine to give the best smearing compound. This is rubbed over the plate, and immediately rubbed off again with a piece of clean flannel, leaving only a very thin coating. When polished glass plates are used as the support instead of the wax and resin, I prefer to use a coating of the thin collodion already described to prevent the adhesion, but in this case the collodion coating must be allowed to dry before immersion in water. The film so formed then readily leaves the glass attached to the print, which retains the polish of the temporary support. Plates thus prepared allow of pigment gelatine images being formed on their surface, not only by development in the way described, but indirectly by employing the image formed by development as a model or pattern for obtaining a mould from which other and similar gelatine images are obtained by casting, and images thus formed may equally be transferred to paper in the way described. The nature of the surface of the support will determine the resulting surface of the gelatine images. A polished surface will give a polished surface to the print. If a mat or grain surface be required, the support must be grained or tooled to give that surface. The gelatine image may be transferred to paper while in the wet state by bringing into contact with it a piece of paper coated with gelatine or other analogous substance, or, which is preferable, the image may be allowed to dry upon its support, and the prepared paper soaked in water may be laid upon it, air being carefully excluded. Or the resinous cements already referred to in my third improvement may be used, giving to the dried image coating of the shellac solution and to the paper a similar coating, and then bringing the two wet surfaces together. I also transfer the print from its temporary support to a sheet of imitation ivory, as in the so-called eburneum process, or to a sheet of imitation porcelain or marble formed of plaster or other plastic substance. When the print is required to be mounted upon a fabric I take fine muslin or other porous fabric, and after wetting it I lay it over the print upon its temporary support, and I spread over the muslin or fabric any of the before-mentioned cements mixed with whiting or other pigment. This compound penetrates to the surface of the print, thoroughly expelling air, and when dry perfect contact is effected. The muslin or fabric can then be lined with canvas, as is well understood. If the picture be very large and be formed of several negatives I mount the several parts upon paper or other flexible support, either coated with india-rubber as already practised, or, as above described, I cut out the several parts, wet them, and lay them down well matched upon a drawing-board, and I then proceed to mount them upon, or rather under, the muslin or fabric as already said.

I claim as my invention under this fourth head of my improvements:—

First. The formation of the mounting of the gelatine image formed as described upon a sheet of glass, metal, or other impermeable surface serving as the permanent support, without the intervention of any cementing material to be used as pictures or as models, moulds for producing engraved plates or otherwise.

Second. The mode of transferring images of gelatine mounted upon the surface of plates of glass or metal from such surface (serving as a temporary support) to the surface of paper or the like material by means of an intervening film of wax or other substance having the like properties.

5. My fifth improvement consists in another mode of transferring the picture, in one or many parts, from its temporary to its permanent support for the purpose of being painted upon in oil or being varnished. I mount the picture, in this case, upon paper rendered transparent by wax, paraffine, or any fatty matters not fusible at the temperature used for developing the gelatine pigment prints. When the developed print is quite dry I varnish the surface of the permanent support which is to receive it—such as wood, panel, or oil canvas. I varnish also the face of the picture, and if of several parts I carefully match these. The two varnished surfaces, when nearly dry, are then rubbed down together; and when in perfect contact the back of the waxed paper is warmed, and then leaves the pigment film perfectly attached to the panel or canvas. Before the picture is transferred it may be tinted or painted; and if painted with opaque colour it may be laid over another picture without the latter being seen. Thus I form composition pictures by laying down a landscape background, for example, upon the canvas, and upon it I place figures trimmed to their contours, and which have received a coating of white or coloured opaque varnish at the back. These then show as perfect forms without the landscape or other background interfering; and as the gelatine film is extremely thin, the superposition is not visible.

REMARKS UPON REMOVING VARNISH AND RETOUCHING NEGATIVES.

BY F. STOBZE.*

It is not unfrequently the case that it becomes expedient to remove the varnish from a finished negative: either the image is too soft, or too vigorous, or the varnish has absorbed a certain amount of silver. In all these cases the method generally adopted is to remove the varnish by means of alcohol; this is, however, a time-taking operation, and, moreover, a very uncertain one, for the majority of varnishes (whose principal ingredient is bleached shellac) withstand even absolute alcohol to a greater or less extent, so that it is never practicable to strengthen or weaken the negative subsequently. For this reason I have discarded the employment of pure alcohol, and have adopted, instead, the following mode of procedure:—

A solution is prepared of one part caustic potash in ten parts of water, and to this is added ten parts of alcohol. This liquid may be kept ready for use. A little of it is put into a glass, and poured on and off the negative until the varnish ceases to flow in a rippling stream. It is sometimes necessary to employ a fresh supply of the solution, when every trace of the varnish will be removed. The plate is subsequently placed under a tap, and washed until the water runs smoothly off; it then finished, and may be dried.

It will occasionally happen that during the removal of the varnish a gritty deposit is formed. The surface of the plate may be cleansed of this by passing lightly over the film a large camel's-hair brush during the operation of washing. If the manipulations are carefully conducted, no fears need be entertained for the safety of the plate; although if the latter has received a coating of gum, albumen, or gelatine previously to its being varnished, a greater guarantee is thereby afforded.

If the varnish is removed simply by reason of its having absorbed silver, there remains nothing to be done after the plate has become dry but to re-varnish it. If, however, the negative is to be intensified, or rendered less dense, I proceed in the following manner:—To bring about a reduction in the opacity of the film, I pour over the plate, previously to its being washed, a pretty strong solution of cyanide of potassium to which an equal volume of alcohol has been added; and, as soon as the film has become sufficiently transparent, wash it at once. A similar method is adopted for intensifying. For this purpose I generally employ Selle's uranium intensifier, to which I add a like volume of alcohol. If, however, pyrogallic acid and silver is to be used for intensifying, I wash the negative first, and then apply the liquids in the ordinary manner without any addition of alcohol.

In removing the varnish from negatives, all retouching upon the film is, of course, washed off; without, indeed, the plate has, previously to its being varnished, been coated with a thin layer of some cementing material upon which the retouching has taken place. As a suitable material for this purpose I would recommend either one part of gelatine dissolved in twenty parts of water, or ten parts of albumen, ten parts of water, and one part of caustic ammonia.

The compound last mentioned is particularly well adapted to the purpose, for the most delicate pencil retouching is possible on a negative coated with it. This preparation is also suitable for manipulation with a brush, and possesses the great advantage that after varnishing the retouching does not appear darker than before. At the same time, I should remark, for the information of those who have but little experience in the matter, that all plates which it is desired to coat with gelatine or albumen before being varnished should be kept somewhat soft and transparent, as, on the drying of the two preservative coatings, the plate gains in vigour.

This mode of proceeding I can confidently recommend to all those who print many copies from their plates. The retouching is shielded from injury by the varnish, and, if the latter is of good quality, the plate may be even washed with safety. If, again, as in winter often happens, the varnish absorbs silver, the plate may be unvarnished without risk of injuring the retouching, which has cost so much trouble to apply.

MODIFIED ACETATE TONING BATH.

Mr. R. D. Ewing states, in the *Canadian Journal of Photography*, that the following toning bath gives excellent results:—

Calcio-chloride of gold ...	... 1	drachm
Acetate of soda	... ½	"
Pure water	... 5	ounces
Prepared chalk	... 5	grains.

To Prepare.—In the morning of the day you require a new toning bath, put the gold, the acetate of soda, the chalk, and only one ounce of water into a one-ounce measure, or other small glass dish; allow it to stand six hours, with frequent stirring (this is to allow the chalk to act on the gold properly, since, being insoluble in water, if it were not intimately mixed with the gold, and in a strong solution, it would not neutralize, and bleaching would result); at the end of the six hours, pour on four ounces of boiling water; when cold, it will be fit for use, and may be used every day for a long period, adding only a small portion of gold, neutralized, as directed above, with the chalk. Some operators prefer to mix cold water with the bath, and put into a porcelain evaporating dish (kept for the purpose only), and bring quickly to the boiling point. The plan is excellent, but care must be taken that the boiling is not long continued; a quarter of a minute of boiling is quite sufficient; be careful not to over-heat it. The secret of success, in my opinion, is to keep the gold solution nearly at its full strength till fully neutralized with the chalk; not to boil too much, and yet to be sure that it has been heated to the boiling point; and, last, never to use the bath till it has stood long enough to become clear, free from yellowness. Lest I should still be misunderstood, I may state that prepared chalk is just carbonate of lime, but, unlike carbonate of soda, is not soluble in water, consequently, it is very difficult to bring it in contact with the gold if spread through a large quantity of water; hence the need of steeping, if I may so call it, the chalk in the strong gold solution, to enable it to neutralize it.

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* *Licht.*

About the yellowness of a toning bath: you will have observed that a newly mixed toning bath is always more or less yellow from the gold solution. Remember, it is never ready to tone till the yellowness has disappeared. Mealiness in the prints is caused principally by not allowing the chalk to act on the gold long enough: remedy, a few drops of a solution of carbonate of soda.

We have been asked frequently about blisters lately. Double albumen paper blisters more readily than common albumen paper, since the outer film of albumen is not difficult to peel from the under one. Briefly let us recapitulate the best remedies we know of. A pure silver bath, of moderate strength, plenty of alcohol in the silver bath. When putting into the first washing water, before toning, place carefully, face down, on the top of the water for a few minutes, to allow the water to soak in from the face, and the air fly out of the back of the paper; then, when sunk in the water, there is less danger of the film being pushed off by the escaping air. Again, when taking out of the hyposulphate of soda solution, put them into the smallest quantity of water that will cover them; even pour a small quantity of hypo over with them, or simply gradually dilute the hypo bath for a few minutes, moving the prints all the time till the solution is very weak; allow to lie for five minutes, pour off, and wash as usual.

Caution.—Never use your silvering dish for anything but holding silver; use your toning bath dish for toning bath only; use the first washing dish only for washing before toning, and the fixing bath only for hypo; never use the last washing bath for anything before its time. The least trace of hypo in any dish prior to fixing will ruin all your work, if not at the moment, certainly in a few days.

Stains after Fixing.—When the prints are not moved constantly in the hypo bath, two prints frequently stick together, and bad fixing is the result; fading and stains succeed.

Freedom from fading stains can always be attained by moving the prints frequently in the hypo, and well washing after they are taken out.

Correspondence.

SEA GULLS.

Sir,—It was very cruel of Mr. J. H. Johnson to publish the secret of our sea-gull picture in your last, particularly as he says he has no doubt we intended to patent it. If he had only written to us privately, assuring us he had found us out, we confess he would have compelled us, in self-defence, to bribe him to silence by the offer of a license under the proposed patent, which would enable him to paint in or scratch out "gulls and other birds" in his negatives at pleasure. As it is, he has forestalled us. We are human, but we freely forgive him.

In the exercise of what he calls "that very useful article," common sense, Mr. Johnson has arrived at the conclusion that the gulls are "painted upon the negative, the whites being laid upon the film, the blacks scraped out." You, Mr. Editor, know us, and have seen the picture, and we are sure you would not believe us if we protested that we preserved our gravity when we read Mr. Johnson's account of his wonderful discovery. But—if we may judge from his hint that we are keeping a secret for commercial purposes—our critic does not know us. Neither (if we could believe it possible a gentleman could criticise, either favourably or adversely, a picture he has not seen) do we believe he has seen the picture; or, as he acknowledges the possession of a little common sense, he would not have been so imprudent as to let all the world know how to do it.

Mr. Johnson tries to persuade the "Old Photographer" that he has been "gulled." We do not apologize to him; perhaps, taking all things into consideration, he will not think it necessary.

We have forgiven Mr. Johnson for disclosing our secret, but we must draw the line somewhere. If we have photographed a few gulls, there is no reason why we should be gulls ourselves; it is uncomfortable to feel that you are suspected of being an idiot. Mr. Johnson says that he may be told that the picture was taken by some very rapid process, "*probably by the new collodion, &c., of Mr. Sutton.*" This is the unkindest cut of all; it is adding insult to injury. Any photographer who is endowed, as Mr. Johnson is, with a little common sense, and who has any knowledge of Mr. Sutton's "inventious," although they include, as we have no doubt he would be glad to have us believe, everything ever invented or to be invented in photography, will scarcely venture to waste time and money on his new craze, notwithstanding the energy with which, as usual, he is endeavouring to puff it into notice. But "the grandest discovery ever made in photography" may be made once too often. The chief characteristic of Mr. Sutton's inventions is, that they go up like a rocket, and come down like the stick.

Robinson and Cherrill.

Tunbridge Wells, September 27th, 1869.

PHOTO-RELIEF PRINTING.

Dear Sir,—In the article in your last under the head of Woodbury's photo-relief process, you quote some remarks of Dr. Vogel's on the difficulty of mounting relief prints. That a modification of some of the methods of mounting silver prints is necessary I am well aware, as the same is necessary in all carbon proofs where gelatine is used. The prints, for instance, must not be dipped in water and then left together in a pile, but they may be damped to any reasonable extent before mounting, if necessary. Because some adopt this method in silver printing, there is no reason why such method should be copied, even if it had advantages, which I think it has not, as the more the print is allowed to stretch before mounting the more will it cause the mount to cockle. I have myself not experienced the slightest difficulty in mounting relief prints; no more have Messrs. Goupil, who have mounted many hundred thousands by precisely the same method as they do their silver prints. Regarding cost, there is no doubt that as workmen get trained to this work—which is entirely new—that work may be done as cheap and as rapidly as lithography is now done.—I am, your obedient servant,

Walter B. Woodbury.

Craven Cottage, Fulham, S.W., September 27th, 1869.

[So far as our personal experience is concerned, and such experience as has come under our own observation, we can unhesitatingly confirm Mr. Woodbury's statement. In relation to every process entirely new, experience is necessary to satisfactory development. The rapidity and certainty with which the prints are now produced, and the great excellence they possess, leave little to be desired. Every kind of print requires its own especial treatment in mounting, and those of Mr. Woodbury involve the necessity for no more care or skill than is required for mounting silver prints. The mode of mounting which we should recommend for such prints is not a modification of the method of mounting silver prints, but the method employed by professional mounters for all kinds of photographs; namely, that in which soaking and all necessity for it is avoided by the use of glue, which satisfactorily prevents cockling. As regards the economy of the process, we believe that the Woodbury prints can now be produced as cheaply as *good* lithographs or engravings.—Ed.]

Talk in the Studio.

Mr. Slingsby's Studio.—Mr. Slingsby, of Lincoln, whose charming photographs are well known to many of our readers, favours us, in response to a recent enquiry, with the following details. He says:—"On reading my Photo News, I see a request as to the kind of studio I am working in. My opinion

[illegible]

To Correspondents.

[illegible]

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 579.—October 8, 1869.

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THE FORTHCOMING EXHIBITION OF THE PHOTOGRAPHIC SOCIETY.

In about a month from this date the exhibition of the Photographic Society will again be held in the Architectural Gallery, Conduit Street. The "exhibition meeting" projected little more than two years ago proving a greater success than the most sanguine hopes could have anticipated, the admirable array of pictures contributed for one evening's display were kept on exhibition for a week, and attracted a large share of public attention. The idea of an annual exhibition for a few days then began to shape itself, and the experiment, having been successfully repeated once, now promises to become a permanent institution, with all the superiority which due preparation and better organization can give it.

As the invitation to exhibit is made to all photographers, whether members of the Society or not, and no charges for space, hanging, arrangement, attendance, &c., there can be no barrier, except the possible supineness of photographers, to the contribution of an extensive and excellent collection of pictures. The value of periodical exhibitions of photographs scarcely needs now enforcing. They constitute at once landmarks of progress, and stimulus and aid to increased excellence. The photographer who has spent twelve months most conscientiously striving after the best results his art can produce, here sees the exact relative value of his exertions; he learns, in a manner impossible without comparison, the exact value of his work; and if it come short of what he ought to have secured, he is enabled to ascertain the points of shortcoming. As a simple question of pleasurable interest, few things can afford the photographer more satisfaction than an opportunity of examining and comparing the contributions of his compeers, and noting individual development as well as general progress; of noting new styles of work, or results of new processes; and making, in fact, a personal acquaintance with much that the year's photographic literature had excited his interest in. We hope the forthcoming exhibition will afford facilities for all the interest and all the profit which a good exhibition ought to afford. To that end we urge on all our readers, who have anything to show, to contribute their quota to this exhibition. The season has not, perhaps, been propitious for the production of many novelties, but, nevertheless, let each send his best. There is now nearly a month of probably fine weather, in which to print and finish pictures for the exhibition, and if the best negatives are at once put in hand, there will be no difficulty in being ready in good time with the best examples of the best negatives.

There is one point we would now enforce on intending exhibitors amongst our readers. We refer to the importance of sending in the contributions in good time. There is a double advantage in doing this: it serves the contributors, and it serves the hanging committee. It should be remembered that in hanging pictures the whole of the contributions should be before the hanging committee before they commence, so that they may secure something like order and design, making a fair symmetrical display on the walls, and, at the same time, doing justice, as far as possible, to the relative excellence of the pictures. If the plans are deranged by the arrival of additional pictures after the general plan has been made, two things happen: the late arrivals get the worst places, which is only just; but they help to destroy the general harmony, and sometimes to seriously mar the effect of many other pictures, which is manifestly unjust. It is within our knowledge that on the last occasion contributions kept arriving throughout the whole of the day on the evening of which the exhibition opened, some coming within an hour of the time announced for opening the meeting; disarrangement, discomfort, and dissatisfaction being the natural and legitimate issue of such proceedings.

As another inducement to promptitude, we may suggest the possibility of a catalogue being issued on this occasion. The impromptu character of the exhibition, and the brief time during which it has remained open, have not justified the Society on the two last occasions to even think of the printing of a catalogue, and if they had been most desirous, the late arrival of many specimens would have made a complete catalogue impossible. In view of the fact, however, recorded by the attendant, that not less than five thousand persons visited the exhibition during the week it was open last year, it appears worthy of careful consideration whether the great additional interest of a catalogue, and the importance to contributors of placing in the hands of visitors due information regarding the pictures and their producers, would not justify some special effort. It appears to us that the end in view might be secured at a very slight cost and without much extra labour. If all the contributions were sent in sufficiently good time to be hung and numbered the day before the exhibition opens, a numbered list of contributions, constituting a catalogue, might be printed in the Society's Journal, which, being issued a few days earlier than usual, would serve every purpose required, without involving either additional cost or risk to the Society.

The opening meeting of the session—which is, of course, the opening of the exhibition—will, as before, constitute a social *réunion* or undress *soirée*, where the members of the Society and their friends and the exhibitors may meet to examine the pictures and enjoy general photographic conversation.

NOTES IN THE STUDIO AND OPERATING ROOM.

"When found, make a note of it." We wish to commend Captain Cuttle's advice to the especial attention of photographers. There is no profession in which a habit of constant note-taking would prove more valuable and interesting; none in which it is more needed. So much of success depends upon precise conditions, and conditions so continually vary under the influence of minute circumstances, that unless the photographer observes closely and records carefully, either in the storehouse of his memory, or, what is much better, in his note-book, he can never acquire the highest skill in the practice of his beautiful art.

Many photographers will feel disposed to answer, "Oh, I generally remember the final result or conclusion at which I arrive in the course of observation and experience, and it is scarcely worth while to note down the detailed steps by which I arrive at such conclusions." The answer is not an unnatural one; but it is scarcely sound or satisfactory. Memory will fail, and it is never wise to tax it with unnecessary burdens. Besides, experience remembered is useful only to the individual, whilst experience recorded becomes useful to others: *litera scripta manet.* Moreover, on the mere score of aiding the memory, note-making is the most valuable exercise; the fact that has been written down will not only be remembered better, but it will be remembered more accurately than that which has never been embodied in words and written on paper. "Writing," says Lord Bacon, "maketh an exact man." The moment a thing has to be written, the necessity is felt for getting it in a definite form in the mind. Very often, until the necessity of writing is felt, the conclusion has existed in the mind in a misty and nebulous form, which would have eventually ceased to have a form at all, like an undeveloped latent image. Some photographers, we know, do keep occasional memoranda; but very few, we apprehend, make a systematic practice of doing so. A friend mentioned the other day that one of the ablest French operators he knew had a volume as thick as a Post Office Directory, consisting of most interesting and curious observations he had made in the course of his practice. What a store of information might be collected if every intelligent photographer would keep a similar record!

We should commend the use of a classified and indexed memorandum book, rather than a mere diary. The daily note-book would of course be useful, but very difficult to refer to efficiently. To give such a record value for reference, headings should be adopted, such as "Negative Bath," "Collodion," "Developer," "Exposure," "Lighting," "Printing Bath," "Toning Bath," "Weather," &c. Referring to "weather," we may recall Mr. Rejlander's ingenious suggestion, that photographers should keep a record of the weather from a photographic point of view, and that, forwarding their observations to us monthly, they should enable us to publish a tabulated "photographic meteorology." If photographers once adopted the habit of note-making, this weather table, recording the photographic characteristics of the weather, would become easy. We should recommend that, in the classified note-book we have mentioned, the photographer should not only record the results of his own experience, and, in important cases, the steps by which he arrived at his results, but that he should record the results of his reading. How often it occurs to the photographer, in reading his Photographic News, or other photographic work, that a suggestion, or fact, or formula, is mentioned which he is very anxious to verify when opportunity shall occur; but when, a few weeks or months afterwards, he looks for it again, it costs hours of sometimes fruitless search. If a note be made, under its proper heading, of the book and page where the suggestion occurs, how much of impatient search, how much of irritation and disappointment, might be avoided! It is not necessary to enter into minute detail, however, either as to the matter or manner of the note-book. If the practice be taken up, each photographer's own habits and experience will guide him in his mode of proceeding. We simply stipulate with those of our readers who adopt the suggestion, that they occasionally favour us with examples of the results of this systematized record of experience which we now suggest. We may conclude these brief hints by an extract from the journal of a photographer who clearly does keep a note-book, and occasionally communicates a little of its contents to our esteemed Philadelphia contemporary. He says:—"It is my habit, at the close of each day, to record anything of interest that occurs in my practise, and I propose to send you a few notes therefrom occasionally." His first note is very edifying. He has been reading Mr. Wilson's "Mosaics," a work somewhat analogous to our Year-Book, and is grateful for so much good matter at such a low price. He concludes his Monday entry on the subject by remarking that "any photographer who is desirous of keeping up with the times, who takes a pride in his profession, who wishes to establish a literature which will compare favourably with the literature of other arts and professions, should encourage heartily every effort made in this direction, especially when he is enabled to do it at so small a cost."

Of course we heartily endorse such a proper sentiment; although it would be quite out of place that we should recommend recording such virtuous reflections in the "Note-book." Our business is to recommend something practical, and the journalist on Tuesday furnishes us with an example:—

"*Tuesday Eve.*—In making some negatives this morning, I was surprised to find them so much better than usual: but before night they fell below the common average, the developer indicating too much alcohol and ether in the bath. I have often noticed that the best negatives I ever made were just prior to the bath giving signs of impurity, and hence have sometimes thought that a certain amount of organic matter was rather beneficial than otherwise. I have, therefore, occasionally, when I found a new bath indisposed to work good, added a quantity of iodized collodion to it, which, after agitation and filtering, was found to work successfully. My usual mode of keeping the bath in good working order is to have always on hand an abundance of water that has been purified by adding ten grains of silver to every ounce of water, and exposing it to sunlight. In this way I am freed from all trouble, so far as the water is concerned. To be sure that the silver added to this, to make up the essential strength for sensitizing, be free from impurity, I expose it again to sunlight for a day or so, then add a few grains of iodide of potass, and, after agitating and filtering, acidify it with nitric acid; I then use it until it ceases to work well. When this happens, it is replaced by another, which is always on hand for meeting such contingencies. I then take the old bath, double its volume with water, neutralize it with carbonate of soda, evaporate it until it reaches sixty or eighty grains to the ounce, filter when cool, and add sufficient of the ten grains silver-water, which has been exposed to the light, to reduce it to forty-five; sun it for a day or two, and it is then ready for use again by simply adding five grains of iodide of potass, and agitating it before filtering, and acidifying it after with nitric acid. This mode of manipulating I have repeated times without number, and in no case failed when I used an excess of carbonate while evaporating. Thus I seldom have an occasion to make up an entirely new bath."

ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

Part III.—Miscellaneous Processes.

We proceed to conclude our *resume* of the methods of producing photographs on ivory by a brief description of two or three other processes which have been practised with success:—

Uranium Printing.—Our experiments with uranium printing on ivory were made whilst working the Wothlytype process; and, for the information of those who have worked that process, we may state that the preparation and mode of working which succeed on paper answer well on ivory. As, however, many of our readers may not be familiar with the details, we proceed to describe them.

In what is termed uranium printing, it should be observed that uranium does not form the image, but operates rather as a reducing agent; and silver, platinum, iron, red prussiate of potash, gold, and other metals may be employed to form the image. Our experiments on ivory were confined to gold and silver, the latter giving the best results. If an image in gold be desired, proceed as follows:—Add from thirty to fifty grains of nitrate of uranium to an ounce of collodion. If the experimentalist intend to make his own collodion, the uranium salt should be dissolved in the collodion first; if he employ a plain negative collodion, then he should add to three parts of the collodion one part of a saturated alcoholic solution of nitrate of uranium. The ivory is coated with this preparation, dried, and exposed under a negative until a well-defined grey image is produced. This will require a longer exposure than ordinary albuminized paper. It is then plunged in a solution of chloride of gold containing from two to three grains to one ounce of water, any free acid in the solution having been neutralized by means of carbonate of lime. If the exposure have been right, an image of a rich purple tint is obtained; if the exposure have been insufficient, or the gold solution contain free hydrochloric acid, instead of an image in gold being obtained, the faint nucleus of an image in uranium is destroyed. A little experience is necessary to produce the best results, both as regards exposure and development. We may remark that the tendency of under-exposure—where the degree of under-exposure is not sufficient to destroy the image—is to produce a ruby tint; and the tendency of over-exposure, to produce an image of a cold metallic black. A silver image may be produced in a similar manner, using a solution of nitrate of silver instead of a solution of chloride of gold. As the materials employed are all soluble in water, careful washing is supposed to secure perfect fixation; but if silver has been employed to form the image, we do not consider simple washing in water sufficient to ensure permanency.

The simplest and most effective plan, however, consists in the use of a collodion containing the nitrates of uranium and silver. A similar uranized collodion to that already described is employed, to each ounce four grains of nitrate of silver being added. The ivory, being coated with this collodion and dried, is exposed under a negative in the ordinary way. It prints in about the same time as albuminized paper, giving a good image of a bistre tint. It should be slightly over-printed in about the degree necessary in ordinary silver printing. On removal from the pressure-frame, the print is immersed in a dilute bath of acetic acid for a few minutes, during which time the uranium salt is dissolved out of the film. It is then rinsed, and toned in an old bath of chloride of gold and acetate of soda; and afterwards, for safety—although no insoluble salt of silver is supposed to be present—fixed in hyposulphite of soda. A thorough washing completes the operation.

When the picture is completed and dried, it possesses, of course, a surface of collodion. This, to some colourists, would not be regarded as an objection, the collodion surface being a very pleasant one on which to colour; but for those who desire the peculiar surface of the ivory itself, the collodion may be easily removed. A few drops of ether are poured on the surface, and the film removed with a tuft of cotton wool; the surface is finally rinsed with ether to remove the final traces of the collodion, and the picture is finished. It will be found that notwithstanding the removal of the collodion, the image is not impaired, but remains vigorously impressed on the surface of the ivory itself. If the film of collodion be thick and of a horny character, the tone of the picture on the ivory will be a little redder than before the removal of the film, but with a porous, permeable collodion, the toning action appears to pass completely through to the ivory itself.

The principal difficulty in connection with this process is the necessity of obtaining special preparations not in use for other purposes; but in many respects it is one of the most satisfactory methods of printing on ivory we know.

AN EASY METHOD OF TESTING THE STRENGTH OF SOLUTION OF NITRATE OF SILVER.

BY W. H. WILSON.*

Most photographers will concede the importance of having the nitrate of silver bath used for sensitizing paper kept at a regular strength, and there are probably few who make use of any method of ascertaining this more elaborate than that with the ordinary argentometer or hydrometer, which, although convenient, is not very reliable, as it only indicates the specific gravity of the solution, and not the quantity of nitrate of silver in it. The best methods are those by volumetric analysis, based upon the theory of combining proportions; and special apparatus have been devised by various makers to suit the object in view, but usually with the slight drawback of requiring some calculation at the time of using.

But there are many photographers, and amateurs in particular, who, like myself, object for many reasons to increase their working plant, and to these I hope the following suggestions for a simple means of estimating the strength of solutions may be of service. The apparatus required has, at least, the merit of not being expensive.

Some time ago, having certain misgivings as to the strength of an old printing bath, I dipped into photographic literature in search of some simple method wherewith to satisfy myself on the point. Not meeting with what I required, I had recourse to the table of equivalent numbers to help me out of the difficulty. What I required may be stated as follows:—That the *number* of drops of a solution of chloride of sodium which it took to precipitate the silver in a given quantity of nitrate solution should represent the number of *grains* of nitrate of silver to the ounce in that solution.

We first fix upon a convenient quantity of solution to be tested—say 100 drops. By a simple calculation it is found that the solution of chloride of sodium must be 34½ grains to the ounce. The question is thus stated:—As 170 : 100 : : 58·50 : 34·4; or, as the equivalent of nitrate of silver is to the number of drops to be tested, so is the equivalent of chloride of sodium to the number of grains to the ounce in the test solution. As table salt will most probably be used, we may say thirty-five grains to the ounce, to allow for a slight impurity. An eight-ounce bottle of the test solution will last the most active worker for a long time. The apparatus needed is a test-tube and a pipette or dropping-tube.

Measure into the test-tube with the pipette one hundred drops of the solution to be tested. Rinse out the pipette, fill it with the chloride of sodium solution, and then drop carefully into the silver solution, counting the drops, until it is seen that no more precipitate is caused. The number of drops used—less one or two which may be deducted, as they will probably be in excess—will represent the number of grains of nitrate of silver in each ounce of solution.

Nothing can well be more simple, and very little time is needed for the operation, as the chloride of silver settles down very rapidly.

To show the necessity for occasionally testing the printing bath, my own—alluded to above—which had been strengthened from time to time by rule of thumb, with the intention of keeping it at its original strength of sixty grains, was found to be eighty-seven grains to the ounce.

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* Read before the Liverpool Amateur Photographic Association.

PHOTOGRAPHY IN PARIS.

[FROM OUR OWN CORRESPONDENT.]

Paris, 5th October, 1869.

A letter from Paris at the present moment can scarcely contain anything of great novelty. It is true the photographic exhibition of the French Photographic Society is open, but when this has been mentioned there is little else to add. I had hoped to have been present at one of the meetings of that body, but I find they have a short *relâche* before opening again for the winter.

It would have been far otherwise if, instead of writing upon photography, it had been incumbent upon me to describe the progress of the other invention of Nicephore Niepce, to which, in fact, he devoted the greater portion of his life, and which was the cause of his visit to London, where he, I believe, produced his first photo-engravings. The subject of velocipedes would indeed be a most fertile subject to dilate upon at the present time, were that question under discussion. The principal streets, as likewise the Bois de Boulogne, are sometimes thronged with these vehicles, for the asphalte paving is capital practice ground. Two-wheel, three-wheel, double, and even treble velocipedes are to be seen, a gentleman and lady being not unfrequently seated upon the same machine, the gentleman in front, working with both feet, and the lady—not always a *grande dame*—working with one foot only. As regards photography, however, there is not much to note. In the streets and on the Boulevards there is exceedingly little to attract or interest, if we except the views of Pantin, which are, of course, everywhere. The *cabinet-format* still holds its ground, and is evidently very popular among the public, notwithstanding the high prices asked for them. Besides these, there seems to be a large number of pictures taken, which stand in the same relation to the cabinet as the latter does to the carte; they are, therefore, about four times the size of a cabinet, and, when executed by such firms as Reutlinger, Mulnier, Alophe, Numa, &c., are certainly splendid productions. They are taken direct from the sitter, and are perhaps as large as it is possible to obtain in that way without notably distorting the features.

One reason why Parisian photographers are more largely patronised than those of London (I allude to the superior class) is due, in some degree, to the fact of the French artists making a greater show of their work. The principal men here have handsome signboards at the more frequented street corners, and occupy studios in the most fashionable and busy thoroughfares, where their doings are boldly put forward to meet the eyes of passers by. In London the case is different: out of a dozen of our best men, not half of them make any show at all, and it is absolutely necessary for visitors to carefully enquire and search for an address before it is found. Another reason, again, lies in the fact that Paris and London differ materially in the character of their *habitues*: Paris is essentially a pleasure town of the most fashionable description, and visited, therefore, from all sides; whereas London is by no means so select as many other spots in England, and it is on this account that we find some of our best operators not in London, but at Tunbridge Wells, Leamington, Isle of Wight, and other localities of aristocratic resort.

The Exhibition of the French Photographic Society has been organized in the old 1855 Exhibition building. It occupies one large hall and two smaller chambers, in one of which the vitrified photographs are shown, and in the other enlargements of transparent *cliches* are thrown upon a screen by means of an oxy-hydrogen light. The latter operation is repeated two or three times a day, so that visitors at any time have an opportunity of viewing them. The enlarged picture may be about nine feet square, and some of the scenes exhibited—a cutter under full sail leaving the harbour, and a steamer at sea—produce quite a startling effect, so full of life do they appear. Besides this entertainment, there is another demonstration repeated at intervals, showing the process of Woodburytype, a gentleman delivering a short lecture on the subject, and performing the operations practically in the presence of visitors. The explanation afforded by the lecturer was, on the whole, clear and precise, but I could not entirely agree with some of his observations. He informed us that the Woodburytype was not more clever, nor productive of better results, than those methods by means of which other specimens on the walls (prepared by a thousand and one of the so-called mechanical processes now cropping up everywhere) had been obtained, and that it was in fact simply an additional means of producing photo-mechanical prints. The audience were, on this account, evidently puzzled to know why their attention was specially called to the process, if it did not present any superior advantages, and some, who had at an early part of the address become bewildered over the action of the light upon the bichromated gelatine, went away subsequently quite easy in their minds as to the wonders of the process, having been shown at the conclusion some chromatic specimens in a case, produced by Niepce de St. Victor.

I will not go fully into the merits of the pictures on this occasion, but will delay my remarks until I have made a second and more careful inspection of the exhibits. Neither will I make any comparison between it and our own gatherings, excepting so far as to pronounce the former as not more attractive or talented than the London Society's exhibition of last year. It is true we had not among us works of a special character corresponding in excellence to those of Lafon de Camarsac, Soulier, Ferrier, Reutlinger, &c.; but, on the other hand, such pictures as were exhibited by Rejlander, Robinson, Hubbard, Gordon, England, and several others are without their equal in the French collection. But very few Salomonesque pictures are exhibited, and such as are shown are, with one exception, by Englishmen. There are, indeed, but very few of our own countrymen among the exhibitors, and as these unfortunately only show pictures *à la* Salomon, slightly, but still palpably, inferior to those of the great master, they are, of course, nowhere.

Carbon printing, some of which is below mediocrity, takes up much space, and photo-engraving and photo-lithography monopolise still more. Indeed, one-half of the exhibition may be said to be taken up by specimens of the latter description, and, as much of the work is of an inferior kind, the otherwise very high standard of the exhibition is somewhat marred. It is, of course, perfectly right to admit specimens of processes varying from one another only in the most minute particular, but, at the same time, so many examples of each method need not have been exhibited. As a whole, however, the exhibition affords a remarkably true indication of the present state of the art. To the general public the show is a beautiful, as likewise an interesting one; while to the student it demonstrates, in a very forcible degree, the patient and persevering manner in which investigators have laboured and plodded along every highway and byeway that appeared to them likely to lead to success.

◆

OBERNETTER'S GLASS PHOTO-PRINTING PROCESS.

M. Obernetter has forwarded to Dr. Liesegang some proofs in printer's ink, produced by a new photo-mechanical process. The pictures are stated to be quite equal to any yet produced by mechanical means, although a comparison in detail between them and those produced by the Albert and other processes would naturally be premature. The Obernetter prints (cartes-de-visite) exhibit a greater degree of sharpness and detail than the majority of other similarly obtained specimens, and fully equal the better results of the Mareschal phototype process. The inventor has not yet elaborated the method to his perfect satisfaction, but is still engaged in investigating its practicability.

The details of the process may be gathered from the following remarks of M. Oberuetter:—

"I coat a sheet of patent plate glass with a solution of gelatine, albumen, sugar, and bichromate; dry it, and expose to light under a negative. I then dust the plate over with powdered zinc, in the same manner as in the preparation of photo-enamels. The plate is now heated to a temperature of 150° Reaumer, or exposed to light until the whole surface of the film has been rendered insoluble.

"Before printing, I etch with dilute muriatic or sulphuric acid. By this operation the parts of bichromated gelatine covered with zinc are rendered, by the formation of hydrogen, susceptible of attracting water to a greater or less degree, while the other portions, upon which no zinc has settled, are capable of receiving a fatty ink. The printing is then proceeded with in the same way as with a lithographic stone."

The process possesses the following advantages over other methods:—

The plates are more permanent.

The film does not become crushed, nor is it liable to slip during working—mishaps which destroy the greater number of prints in other processes.

"After the required number of prints have been struck off, the plate may be put on one side and preserved, it being ready for use again at any moment."

M. Obernetter is so sanguine in regard to the capabilities of his process that he has promised to present all the readers of the *Photographisches Archiv* with a specimen print within the next few weeks.

Finely powdered zinc, suitable for employment as above described, may be obtained by rubbing a flint stone against a sheet of zinc moistened with water, the finely divided metallic particles being collected and dried.

Dr. Liesegang appears much impressed with the value of the process, and expresses himself exceedingly well pleased with the specimen prints forwarded to him. He likewise compliments M. Obernetter on the frank and open manner in which he has made known and described his process.

MARBLE MARKINGS ON THE NEGATIVE.

BY L. G. KLEFFEL.[*]

There are but few photographers who have not remarked the appearance of this phenomenon upon their plates, and have yet been unable to explain its origin. The markings to which we refer are generally of a mottled or flowery nature, and appear upon the plate after sensitizing; the lower portion of the film is more particularly attacked, although the centre is also sometimes marked, the defect being best seen by transparence before development, or, if this latter operation has been somewhat vigorous, the stains are likewise apparent by reflection at the back of the plate, when they appear to be situated between the glass and the film.

With very porous collodion—such as is employed in the preparation of dry plates—this phenomenon is never, or very rarely, produced; with other collodions it often occurs; that is to say, if the operations are not conducted in a careful and uniform manner.

A long series of researches and experiments, instituted with great care, has proved to me conclusively that these stains are due neither to the collodion, nor to the silver bath, nor even to defective cleaning of the plates; the sole cause of their origin lies in want of care and attention on the part of the operator in sensitizing the plate. This is abundantly proved by the fact that it is possible to produce and avoid the phenomenon at will.

I have been enabled to arrive at the true cause of the irregularity, and a knowledge of the same will at once suggest the remedy. When a plate is coated with collodion, there is formed at the spot where the liquid is allowed to run off, a thicker accumulation than upon the opposite portion of the plate, and at this point, therefore, the collodion takes a longer time to set. If the plate is plunged into the bath in the position in which it has been coated, a lateral ebbing of the liquid is brought about, and this, on flowing back after the complete immersion of the plate, produces a wavy motion, causing the film to rise at that point where it is still moist and but imperfectly adherent to the glass. This action naturally follows in a direction from the edge towards the centre of the plate. The raised portions of the film, being where the collodion is thickest, are more strongly iodized than those portions where the coating is thinner, and it is this inequality in the amount of the iodide which gives rise to the mottled and flowery markings under discussion.

The defect is, indeed, very strongly pronounced if the plates are rapidly and abruptly plunged into the bath before being perfectly set, as the more agitated the solution the more decided is its action upon the film. On the other hand, if care is exercised in properly drying the plates and in immersing them slowly and regularly, the phenomenon disappears altogether. Agitation of the bath while the plate is immersed fails to arrest the formation of the stains, as these are irremediably formed at the moment of the plate entering the liquid.

In order to control the correctness of my observations, I instituted an experiment in another direction, the result of which leaves no doubt as to their accuracy.

If the collodionized plate is reversed in such a manner that the more thickly coated portion is uppermost, the marble markings become of less frequent occurrence (if the plate is immersed too soon and too rapidly), because the part exposed to the action of the wave is less thick and more perfectly set, and the lifting of the film is therefore less pronounced. Another conclusive proof is afforded by the fact that if a plate is held in a diagonal manner to drain, the markings are formed in the same direction and of corresponding intensity, according as the collodion on that spot is thicker and less perfectly set. If a plate is divided into two portions by means of a waxed thread, and one half thereof coated before the other, so that the first portion is set before the last, and if the plate is then immersed parallel with the thread, the half first coated will be found to be quite clear, while the other is very far from being so.

For the above reasons it is evident that the phenomenon cannot be produced if horizontal baths are employed, where the liquid washes the plate uniformly, affecting alike the whole surface of the film; a rising of the latter is, indeed, impossible, on account of the liquid pressing down upon the surface of the plate.

A collodion containing more ether than alcohol is less subject to the defect, on account of its setting more quickly, and adhering rapidly to the plate; at the same time I would not recommend the exclusive use of a collodion of this description, from the fact that it is always inferior in quality to that which contains an excess of alcohol, and because, as already pointed out, the stains or markings can always be avoided by careful manipulation.

M. CROS'S SOLUTION OF THE PROBLEM OF PHOTOGRAPHY IN COLOURS.

The problem of photography in natural colours, if the somewhat enthusiastic, and, at present, altogether theoretical, conclusions of some of our French neighbours are to be trusted, is in a fair way for solution; at any rate, the pamphlet published by M. Charles Cros, detailing the principles upon which chromo-photography may be based, deserves careful consideration, as containing not only novel theoretical statements, but also some very logical and ingenious, if not altogether correct, reasoning. It does not profess to have worked out practically the process of photographing in colours, but is sanguine that his researches will have a direct bearing upon the subject, and demonstrate the manner in which successful results may be obtained. His investigations and deductions, some of which are certainly open to question, are similar to those of M. Ducos du Hauron in many respects, but his studies have evidently been much deeper and more varied than those of the latter gentleman.

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[*] *Bulletin Belge de la Photographie.*

He commences by stating that all tints are made up of three fundamental colours, and any portion of a painted picture might indeed be expressed by a tabulated statement representing the value of its colours. In the same way as the tints in an ordinary photograph, which vary from white to black, are expressed by a series of shades more or less intense, so monochromes might be prepared in which either of the three fundamental colours—red, blue, or yellow—existing in an object would be represented. If the object reproduced were a coloured picture, the monochrome—blue, for instance—would represent not only the whole of the blue colours upon the picture, but likewise all those colours which to a certain extent contain blue; that is to say, not only the simple, but likewise the compound colours. Another monochrome would represent all the yellow portions of the picture, or those containing a proportion of yellow; and it would be the same likewise with the red monochrome. Three *clichés* of this kind would represent in blacks or greys, more or less intense, the respective qualities of red, yellow, and blue, which exist over the whole surface of the picture. Thus an analysis of the picture, as regards its colour, has been effected, and a building up of the results by synthesis is all that is required to reproduce the original object.

There are two methods of obtaining the elementary monochromes, the one by *successive analysis*, the other by *simultaneous analysis*. The first consists in sifting the rays of light by passing them through coloured glass. One *cliché* is taken by means of a red glass, which allows the red rays only to pass (in reality, white rays likewise pass at the same time, but the red is at its maximum); this *cliché* expresses by its opacity and transparency the quantity of red represented in every portion of the tableau. In the same way another *cliché* is prepared behind a yellow glass, and another behind a blue one, the unequal photogenic activity of the different description of rays being compensated by proportionate reinforcement in the sensitizing bath and developer, and by varying suitably the length of exposure.

In producing results of the above description, difficulties in regard to the description of coloured glass to be used would have to be overcome, for it would be necessary to have a material of a pale tint, and without imperfection of any kind. Substitutes might be found in the use of coloured liquids, or one of the glass surfaces of the lens might be tinted with varnish.

Another way of producing results by successive analysis would be to replace the coloured glasses by means of a prism, to be turned round, as each *cliché* is taken, in such a manner that in the one case red, in another blue, and in the third yellow rays are produced. A third method—which could, however, only be used in the reproduction of portraits, paintings, flowers, &c., not in the open air—consists in flooding the object first with a red, then with a yellow, and afterwards with a blue light, and taking three consecutive images in a camera in the ordinary way.

The second mode of analysis, called *simultaneous* analysis, consists in taking at one time the three *clichés* in the three regions of the simple rays of the spectrum which result from the decomposition of the light emitted from the picture. A system of lenses is disposed in such a manner as to form into a pencil the rays emitted from the picture; this pencil of mixed rays falls upon a prism, which decomposes and exhibits it in the form of a spectrum. Three elementary lenses gather up respectively the red rays, the yellow rays, and the blue rays, and form three partial images upon the sensitive film, where they are fixed. It would possibly be necessary to place in front of each of the lenses another prism, to compensate for the elongation of the images.

The practical difficulties here to be encountered would be the insufficiency of the light, and the unequal chemical activity exerted by the different colours.

To build up again the original object from these three elementary *clichés* is next the question. In the first place it should be remarked that each of them represents an ordinary but incomplete negative of the original, and that if a print were produced successively upon a sheet of paper from the three *clichés*, a perfect photographic print would be the result. In the red monochrome the more opaque portions represent the parts of the object containing the maximum of red, while the transparent portions represent those parts containing the least amount of red; it being the same, of course, with the blue and yellow monochromes. If these relations are reversed by producing upon glass a positive of each *cliché*, the maximum of colour would then be represented by the most transparent portions of the positive. Red light may now be thrown through the positive transparency upon a screen, and the effect produced will be a representation of the red lights in the original picture; if the other two transparencies are furnished with blue and yellow light, and the three reflections made to coincide with one another, a perfect representation of the original object should be given in all its varied tints, the blacks, of course, being caused by an absence of all descriptions of light. The effect might naturally be produced in other ways, by employment of the positives as transparencies, by employing coloured varnishes, &c.

The processes of synthesis may be said to be of two kinds, *successive synthesis* and *simultaneous synthesis*.

The first is well illustrated by the popular toy known as the zootrope, in which colours are rapidly substituted one for another, so that the impressions produced upon the retina become confused. As in this instance only three different colours are employed instead of twenty or thirty, the desired effect would be comparatively easy of accomplishment, the coloured images being arranged round a movable disc.

Of *simultaneous synthesis* there are three descriptions: synthesis by reflection, synthesis by refraction, and synthesis by transparency, by means of antichromatic positives. Synthesis by reflection is obtained by employing a glass surface, not only as a medium to see through, but as a reflector; the building up of the picture being brought about by placing one of the images behind the glass, and reflecting the others upon its surface.

Synthesis by refraction is one of the most elegant solutions of the problem, being founded upon the following principle: If a mixed ray, containing red, blue, and yellow, is sent through a prism, each of these three fundamental colours emerge at different angles of the prism; by reversing the action, therefore, and sending rays of the same colour back through the prism at their respective points of emergence, a mixed ray will be reconstituted. This may be applied practically in the following manner: Three *clichés* are taken in the three regions of the simple rays of the spectrum, and positives obtained therefrom in the form of transparencies or otherwise. Upon these positives are applied the colours, red, blue, and yellow, and they are then viewed by means of an analyzing prism, when they will be found to form but one image. The same effect is obtained by projecting upon a screen the rays as they emerge from the prism. In prosecuting the research further, a purer and more simple solution of the problem may be arrived at where the employment of artificial colour of any kind is rendered unnecessary; it is founded upon the following principle: A ray of white light traverses a prism, the red, yellow, and blue emerging at distinct angles. If, in the reverse direction and at the angle of emergence of the red ray, a beam of white light is sent, the same will be decomposed, and the red contained in it takes the direction of the first white ray. In the same way, the inverse white beam, penetrating at the angles of emergence of the yellow and the blue rays, will give in the direction of the direct white ray one of yellow and of blue. Therefore the same apparatus used in the first instance for decomposing or analyzing the object or picture into three *cliches* taken in the red, yellow, and blue regions of the spectrum, may also be used when the photographs have been secured for effecting the synthesis; it would suffice to replace the three *cliches* by their positives, uncoloured, and to send through each of these a ray of white light in the direction or angle of emergence of the colour corresponding to each *cliche*. Thus a representation would be reproduced of the object in its original colours, either upon a screen or upon the eye direct.

Antichromatic synthesis consists in superposing one tint upon the other. The three *cliches* might be transferred to stone or metal, so as to yield positive prints. Of these, impressions would be taken upon paper, and by means of a tint of a *complementary* colour; thus the plate produced by the red *cliche* would be inked with a green, that of yellow with a violet, and that of blue with a yellow transparent tint. The impressions being successively printed off upon a sheet of paper, a proof would be obtained in the original colours of the object. Transparent tints must, of course, be used, so that the three layers of ink are visible, and, where the three inks are thickly laid one upon the other, black will be produced, while the whites will be represented by bare white paper.

These are the sum of the theoretical propositions of M. Cros, and for those who desire to make practical experiment of the same he recommends the following preliminary mode of procedure.

Analysis.—To obtain a reproduction of a painting, bouquet, or case of butterflies, &c. Take three sheets of glass, and colour them respectively with a pale tint of blue, red, and yellow. Obtain three *cliches* of the object, using the above sheets of glass as transparencies in front of the lens, and augmenting or decreasing the exposure as necessary.

Synthesis.—Print three positives, either upon paper or glass, covering each print respectively with the same description of varnish which served in the production of its negative. Procure two plates of pure clean glass, and mount them, as likewise the prints, upon five independent supports of the same height. Then endeavour to make the images of two of the prints reflected in the glass plates coincide with one another, while the third picture is viewed direct through the glasses. It will be necessary to illuminate the positives in a suitable manner by means of mirrors; by modifying the angle of reflection upon the transparent glass every variety of intensity may be secured. A result being obtained, the conditions necessary for the construction of a permanent apparatus could then be fixed.

"DIAPHAN."

BY PROF. J. TOWLER, M.D.

Professor Towler, in a recent article in the *Philadelphia Photographer*, warns American photographers against being victimized by persons hawking a method of colouring photographs at the back. He says:—

"The name *Diaphan* I give to a process that has appeared before the public during the last ten years under a variety of names; for a new name given to an old process converts the old process into a new one. This self-same process has been patented in Australia, England, and the United States. Notwithstanding this, it is public property, for it has been practised from time immemorial.

"I would not dare to bring it before the public now as a new process if I did not have a special object in view, which object is to guard the public—that is, the photographic fraternity—from being duped. The picture in question is exceedingly attractive, and many of my friends have been so far enchanted with it as to pay dearly for the right of producing the Diaphan, when they might have obtained it for a few shillings if they could only read. I have no doubt that those very friends who have paid their thirty-five dollars for the secret possess the work which contains a full description of the process.

"The Diaphan is a coloured photograph of great beauty, but no art; and it requires no artist to lay on the colours; a child can do that part of the operation. The man that is running through the country and selling county, town, and room rights, says so. He is right. There is no art required. He might still add, that the process is neither new nor his property. He does not go so far as this; on the contrary, I believe he asserts that he obtained the process in Paris. That, of course, is enough to entitle the process to honour and acceptance.

"Now let us see if I can recollect how I used to make the Diaphan. In the first place, you print two prints of the same negative on plain—that is, arrowroot or gelatine—paper. You will find instructions how to make such paper in the "Sunbeam," or you can get it of your stock-dealer. Albumen paper does not answer for the production of the Diaphan; at least, not for one of the prints, which is to be rendered quite transparent. The negative must possess good contrasts, without being harsh; and the prints must be printed, toned, and fixed in the usual way, and be quite bright when finished.

"We will now proceed to the next step. Take one of the prints and immerse it in a colourless varnish, such as is used for the preparation of tracing-paper, used by surveyors, engineers, and draughtsmen. There are several formulas for such varnish. This consists essentially of colourless Canada balsam and spirits of turpentine; to this, sometimes, gum mastic is added. The varnish must be of such a nature as to remain colourless for years. This, perhaps, is, in reality, unattainable, for all such preparations are apt to turn yellow when exposed to the air. The print, after thorough immersion and soaking, becomes quite transparent. It is taken out and hung up to dry.

"Now comes the colouring part of the operation, which a child is to perform, and can perform.

"Rub on a ground slab of marble, or of glass, a cake of pink madder. Do not spare your colour. Let the child cover the face, ears, neck, and arms—that is, all the flesh parts—with this colour uniformly all over the surface as far as the outlines, on the *back* of the transparent print. Do not be afraid of laying on too much colour. The child understands this part better than the artist, who, in general, is rather stingy with his colours, not so the child.

"If the hair of the model is auburn, red, or yellow, rub up a quantity of this colour on the slab, so that the pencil can be filled with it, and thus transferred to this part of the portrait, and laid on uniformly with a dashing boldness, but on the *back* of the print, as before. Paint the dress, the gloves, the shoes, stockings, &c., each in its appropriate colour, in an artistic slap-dash manner, without fear of consequences, so long as you do not overstep the boundaries of the objects. The child understands this, and makes no attempt at shading; for this is unnecessary, existing, as it already does, in the photograph itself.

"Now we proceed to the final operation. The two prints are now superimposed, the coloured print on the uncoloured print, and in such a careful manner that the superimposition is perfect; that is, that eye is placed over eye, nose over nose, ear over ear, finger over finger, &c.; in fact, so accurately that they produce in combination but one single picture. In this condition they are pressed and mounted together between two plates of clean glass, which are closed around the edges with gum-paper or cement. This combination, finally, may be covered with a matt and ornamental edging, and fixed in a frame or case, as may be desired.

"Without any jesting, the Diaphan is a very pretty picture; but there is no need of paying the piper so dear for a process which is public property.

"In three years the Diaphan will be again quite forgotten; another set of men will occupy the galleries. We shall then see, perhaps, an Italian or a Greek peddling the process as a new dodge of Greek painting, of antique art exhumed from an artist's studio at Pompeii. And thus time rolls on, resuscitating ancient art by the turn of the wheel."

MORE MODES OF INTENSIFYING.

BY PROF. J. TOWLER, M.D.*

Many operators still resort to other modes of intensification not yet referred to in my previous article; for instance, with iodine, pyrogallic acid, sulphate of uranium, and ferridcyanide of potassium, &c. These methods are all reliable.

Intensification with iodine.—Make a stock solution of iodine in alcohol of the following strength:—

Iodine	48 grains
Alcohol	1 ounce

This solution can be labelled "Tincture of iodine."

Pour a drop or two of the tincture of iodine into a couple of drachms of rain-water, and shake the mixture well. If the negative is still wet, pour the dilute iodine solution over the film, and keep it in motion. It is an excellent plan to intensify by this method when the sun can shine upon the negative, for then the action is more rapid and effectual. The solution gradually parts with the iodine, which combines with the silver in the film of the picture and forms iodide of silver. This reaction communicates to the film a rosy hue, which is somewhat of itself non-actinic, whilst, at the same time, the deposit increases in thickness. As soon as the solution is quite bleached you may add a drop or two more of the iodine solution, and proceed as before, until the intensity is satisfactory. The plate is then washed, for it is supposed to have been previously fixed before you apply the iodine. This intensified plate may undergo further intensification and a change of colour by now applying pyrogallic acid to the wet film.

Make stock solutions as follows:—

Pyrogallic acid	18 grains
Acetic acid	1 ounce
Nitrate of silver	30 grains
Water	1 ounce

For present use take half a drachm of the stock solution of pyrogallic acid, four drachms of water, and two drops of the silver solution. Mix intimately by shaking, and then pour it upon the film, moving it about all the while from side to side and from corner to corner, so as to cover the whole surface. The shades now soon change their hue from the rosy tinge to a much more agreeable one to look at. As a general thing, any amount of intensification can thus be obtained. Finally, wash and dry.

But the same solutions of acid, pyrogallic acid, and silver can be used as an intensifier without the previous application of iodine; and iodine, too, may be dissolved in an alkaline iodide instead of being diffused through water. Some prefer this method of obtaining a solution of iodine. In this case the following solution is kept in stock, and labelled, "Solution of Iodine in Iodide of Potassium":—

Iodide of potassium	1 drachm
Distilled water	1 ounce
Iodine	1 drachm

A drop or two of this solution is used instead of the tincture above given.

Again, the two following stock solutions of iodide of silver in iodide of potassium, and of iodide of mercury in iodide of potassium, are excellent intensifiers, especially when combined or continued with the acid pyrogallic acid.

Iodide of silver is prepared as follows:—

Dissolve one drachm of nitrate of silver in four drachms of water; to this solution add gradually a solution of iodide of potassium, until all the silver is precipitated as the yellow iodide of silver. To ascertain when this is the case, let the yellow precipitate settle, and pour off the supernatant liquid. Now add to the latter a drop or two of the solution of iodide of potassium; if a yellow precipitate is again precipitated, it is a sign that the silver is not all out of the solution. Supposing, however, that no precipitate is produced, we cannot conclude from this test that there is no more silver in the solution. Two tests are required to prove this fact: one has already been made; now comes the second:—Add to the decanted solution on which the first experiment or test has been made, one or two drops of nitric acid; if this produces a precipitate of a yellowish-white colour, it shows that there is still some silver in the solution, and that you had added too much of the solution of iodide of potassium, which, when added in excess, dissolves iodide of silver. Therefore, drop in carefully nitric acid, drop by drop, until no more precipitate is produced. Finally, pour off the liquid portion, and wash the precipitates in many changes of water. The resulting substance is the yellow iodide of silver, which may be kept moist in a bottle, and labelled.

A precipitate of the beautiful scarlet-coloured iodide of mercury is prepared precisely in the same manner, only that here you substitute nitrate of mercury for nitrate of silver. The tests are also the same, in order to ascertain whether all the mercury has been extracted from the solution. This precipitate, in like manner, may be preserved in a moist condition, and labelled, "Iodide of Mercury."

The solutions required for intensifying a negative or positive picture are prepared from the preceding precipitates in the following manner:—

Prepare, in the first place, two ounces of a saturated solution of iodide of potassium—that is, take two ounces of distilled or rain-water, and add to the water as much iodide of potassium as it will dissolve after shaking the solution repeatedly. Now place respectively a drachm of iodide of silver and of iodide of mercury in two vials, and pour upon each two drachms of the saturated solution of iodide potassium. This solution will in either vial dissolve a portion of the contained precipitate. Shake the mixtures well, and then allow the residual precipitates to settle. Should it, however, happen that all the yellow and scarlet substances are totally dissolved, add more of these latter substances until a portion in either vial remains undissolved. Decant the liquid portions into separate vials, and label them respectively, "Solution of Iodide of Silver," and "Solution of Iodide of Mercury." Both of these solutions contain silver in such a condition as to be easily precipitated or deposited on the silver picture, either on a negative or positive, and in this manner the shades of the pictures are thickened, and consequently intensified. The respective colours, too, being non-actinic, render the intensification quite effective. Still, a more pleasing negative is produced in either case by treating the well-washed and intensified film with the acid pyrogallic acid as above recommended.

If the negative is nearly dense enough, it is not at all necessary to apply either iodide of silver, or of mercury, or iodine alone, so as to first thicken the deposit which forms the shades, but simply to treat the wet film with the acid pyrogallic acid, containing a drop or two of nitrate of silver, which latter supplies the material to be deposited, whilst the pyrogallic acid, acting upon the new deposit, forms a new organic salt of silver on the shades of the picture already formed. If you follow this mode of intensification, you must be particularly careful to wash the plate thoroughly from all adhering cyanide of potassium which had been used in the fixing solution, otherwise you will expose yourself to a serious inconvenience by thus producing a red film even on those parts which ought to be perfectly transparent and coloured.

Some operators prefer citric acid to acetic acid, which is required as an addition to the pyrogallic acid in order to control its energetic action and to prevent fogging. The colour of the resulting intensified negative is different in the two cases; and this colour is the cause of the preference. With the acetic acid the colour inclines to a reddish or horse-chestnut hue; whilst with the citric acid it is more inclined to a greyish blue. In many cases, where not much intensification has been needed, the difference in colour is very slight.

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* *Philadelphia Photographer.*

Intensification with an uranium salt and ferridcyanide of potassium.—This with some is rather a favorite mode of intensification, because it communicates a sort of brick-red colour to the negative. It is certainly reliable.

Prepare the two following solutions:—

No. 1.

Sulphate of uranium	20 grains
Distilled water	2 ounces

No. 2.

Ferridcyanide of potasium (red)	20 grains
Distilled water	2 ounces

These are the stock solutions.

When about to intensify a negative, make the following mixture:—

Water	1 ounce
No. 1	1 drachm
No. 2	1 ,,

Shake the mixture well up, and pour it upon the film, and keep it in continual motion. The more dilute the solution and the slower the process of intensification, the more beautiful is the result. If the solution be too strong, the decomposition takes place in the solution itself, without the intervention of the negative in a state of physical tension, and thus gives rise to a visible deposit of red powder, which adheres very tenaciously to the negative, and thus spoils it. When this deposit begins to form, pour it immediately from the negative, and wash the latter; then pour on some fresh solution, or filter that which had been poured off, and use the filtrate. You must be careful not to intensify too far with this intensifier, as the opacity is very deceptive when you come to print with it. In order to succeed more frequently, it is, perhaps, advisable to make the intensifier as weak again as the mixture above given. Much depends upon your general mode of manipulation.

In case you cannot obtain the sulphate of uranium, you may use, instead of it, nitrate of uranium; or you may dissolve each ounce of nitrate of uranium in two ounces of boiling water, and to this mixture add one drachm by measure of sulphuric acid. Boil the mixture until all fumes of nitric acid have passed off, and then evaporate to dryness. Re-dissolve in distilled water, and crystallize. A double salt of uranium and ammonia is obtained by neutralizing the excess of acid, after the nitric acid fumes have been driven off by boiling, and then setting aside to crystallize. The double salt, combined with the solution of the ferridcyanide, is an excellent intensifier.

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Recent Patents.

PHOTO-CRAYONS.

BY OLIVER SARONY.

Our readers are already familiar with Mr. Sarony's photo-crayon operations, but it may be interesting to place his specification on record. It is as follows:—

I give effect to my invention in the following way:—I take a small negative portrait and enlarge the same to any suitable extent or variation upon glass, either by sun or artificial light, which portrait I back up with, by preference, rough drawing paper or other suitable equivalent material on which has been lithographed hatched, shading, or free hand lines or tint, such lining or tinting being so arranged on the paper backing as to properly surround the transparent picture on the glass when placed before it.

This improved process or treatment of photographic pictures (which I purpose entitling "photo-crayon vignette") imparts to the picture the artistic effect of a highly-finished sepia drawing.

But, with a view of being well understood, I will further detail the character of my invention. As for example, I take a small negative portrait or picture, and enlarge the same on glass by sun or suitable artificial light as before referred to; but as it is important to the result that the shadows should be clear, I by preference use old collodion containing bromine and iodine, and sensitize the plate in a bath about thirty-five to forty grains strong, rendered slightly acid, the time of immersion being short, as will be well understood by an experienced practical photographic operator. To develop, I prefer to use pyrogallic acid one grain, citric acid one and a-half grains, with sufficient spirits of wine to cause it to run freely over the plate, fixing the portrait with hydrosulphate of soda. I will here observe, that should the negative appear hard, extra exposure and a plentiful use of developer will tone and soften the picture.

In enlarging my pictures from small negatives I have found "Solomon's magnesium enlarging apparatus" to answer well, the time of exposure being about thirty seconds with an ordinary negative; but the time may be regulated by the experience of the operator. The transparent picture or portrait thus produced I place on, by preference, a rough-surfaced paper well known to artists, on which I print, by means of lithography, hatched lines, or tinted shading, or softening background, the transparent picture being so arranged on the glass as to fall in a suitable position for the lithographic hatching or shading to blend into and with the softened outline of the photographic picture, and the transparent picture on the glass, with the lithographed paper back, being united and mounted in the usual way with a suitable glass and frame for protection, completes my improved process, and renders the same ready for suspension, or other modes or means for protecting and exhibiting the picture so produced.

Having thus described and set forth the nature of my improvements, I wish it understood that the same may be diversified without departing from the spirit and object of my invention; as, for instance, the hatching or toning, instead of being lithographed on paper, may be reprinted on the same glass containing the transparent picture; and, in that case, the portrait or picture may be backed up with plain paper or otherwise, which will produce the same effect as before described. Nor do I purpose confining myself to the colour of the lithographic ink or chalk producing the hatching, as the same may be of a grey or other colour or colours as desired; but what I claim as my invention, and wish protected by these my in part recited letters patent, is, giving additional artistic effect to transparent photographic pictures enlarged from small negatives in the manner herein described and set forth.

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Correspondence.

SEA-GULLS AND SUGGESTIONS.

Dear Sir,—Since the issue of your notice of Mr. Robinson's new photograph of sea-side scenery and figures, much interest and amusement have been excited, and discussion been evoked, as to how the work has been done. Not having seen the picture, I can only guess what it is like from the discription in the News, and with the various ideas floating in one's mind.

I have taken more than usual notice of the sea-gulls that frequent the shores of our beautiful bay. Coming up a few evenings since on the Oystermouth and Swansea line, which skirts the shores of the bay for about four miles, I saw numbers of the gulls in groups of thirty or forty each; and as the tide receded they arranged themselves near the edge of the water to feed on the small fish, worms, &c., left on the shore. The shrill whistle of an engine on the Llanelly line caused the gulls to rise on the wing, and this they did all together, and flew away in single file over the sea. Now it is possible that Messrs. Robinson and Cherrill have been fortunate enough to secure such a group, and fix their images on the sensitive plate; then taking another plate from the same point of view; then, by putting one plate over the other, print from both at one time, thus producing the figures and scenery at one time.

These suggestions Messrs. Robinson and Cherrill appear to take good-naturedly, so Mr. Editor can put this in the News or into the waste basket, according as he deems fit.—Yours truly,

18, *Union Street, Swansea.* Thos. Gulliver.

BROKEN NEGATIVES.

Dear Sir,—Will you kindly tell me how best to mend a broken negative so as not to show the joins in printing?—Yours obediently, Gamma.

October 2nd, 1869.

[To mend a broken negative so that the fracture shall be as little perceptible as possible, the printing requires considerable care. The broken pieces of the negative should be placed in close contact on another plate of glass the same size, to which they should be firmly attached at the corners with gum or glue. The printing must then always be conducted in a soft diffused light, as with any direct light a dark line will be produced. If printing in a direct or strong light be necessary, a plate of ground glass or a piece of tissue paper should be interposed between the negative and the light.— Ed.]

PHOTOGRAPHIC RECREATIONS FOR THE WINTER.

Dear Sir,—The inclement weather of the past month has thinned the trees of leaves and our streets of visitors, the latter taking flight all at once, like migratory birds. To parody Shakespeare: "Thus has our glorious summer become the autumn of our discontent;" and discontented enough many photographers must feel to have such a sudden stop put to their out-door practice. Yet let them be thankful it is only their pleasure they have lost, and not their lives, as has been the case of many of the poor sailors and passengers on board the wrecked vessels which have too thickly strown our coasts, of which, in more than one instance, I have been an eye-witness.

I have often regretted, amongst all the improvements of photography, that greater sensitiveness has not been amongst them, as, by the want of this, we lose the opportunity of transcribing nature under some of her grandest aspects.

The photographing of labouring vessels and wild surging seas under leaden skies or thunder's gloomy clouds is, I fear, beyond the powers of the so-called instantaneous processes, as the actinic power of the light is, under such circumstances, very low; and the very small stops required by some lenses to produce flatness of field and depth of focus make matters worse.

There is a silver lining to every cloud, they say; so, although regretting some gratifications lost, let us be prepared to embrace those which are coming. We will, therefore, during the long evenings that are approaching, shut the windows fast and draw the curtains close, and, taking our magic lanterns from their dusty corner, prepare for the much enjoyed amusements of the lovely and much-loved faces which are wont to meet around our hearth at the festive season now so fast approaching. These instruments—at first only ingenious toys, now so scientifically constructed—may be rightly included amongst the apparatus of the photographer, and, aided by the magnesium lamp, are, where enlargements are required, quite a necessity.

During the past year there have been many improvements, both in the manner of lighting, the making of the gases, and the apparatus. Many beautifully effective and highly instructive scientific instruments have become their accessories. I may mention the microscope, of high power. Who could help exclaiming, with Dominy Sampson, "Pro-di-gi-ous!" upon seeing a flea magnified to the size of an elephant, or a sheep tick appearing like a monster craw-fish from Brobdignag? The kaleidoscope, with its ever-changing lines and colours; the polariscope; and last, although not least in variety of application, is an instrument called the aphingescope, which virtually converts the lanterns into opaque microscopes at a very moderate cost, and can be fitted to any lanterns without alteration. By means of this instrument the face of a watch, models in motion, geological specimens, and other opaque objects can be shown, not forgetting the carte-de visite. Thus the operator can become more truly a spiritualist than Mr. Mumler, of American notoriety, by exhibiting the true shade of any departed friend as represented by a carte-de-visite.

114, *High Street, Ilfracombe, Devon.* J. Martin.

INSTANTANEOUS PRINTING PROCESS.

Dear Sir,—I have made the following extracts from a work by N. G. Burgess, New York, 1861, and would thank you for your opinion upon them:—

"In dark cloudy days it is sometimes desirable to print positives. The following will be found useful, as pictures can be produced in the least portion of daylight:—

Float the papers, each for five minutes, in the following saturated solution of—

Bichloride of mercury	6 drachms
Water...	1 pint

Silver it in a plain silver solution forty grains to the ounce of water.

It must be done in the dark room, and the lamp carefully screened. Expose for about two to ten seconds in summer, and not more than a minute in winter. Remove the picture into the dark room, and develop with the following:—

Sulphate of iron	½ ounce
Water	1 pint
Glacial acetic acid	¼ ounce

Develop until the picture is of the desired colour; then wash, and immediately fix with hyposulphite of soda; and, finally, carefully wash as in the ordinary process."

If it is not troubling you too much, I have made two or three more extracts, which I should like to know your opinion upon at your convenience.—Yours truly, Orwell.

Ipswich, October 4th, 1869.

[The development of paper prints with iron solutions requires very great care. We have not tried the process in question, but see no reason why it should not give good results. We shall be very glad to hear the results, if the process be tried by our correspondent or any of our readers.—Ed.]

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on Tuesday evening, the 28th ult., the President, Mr. O. R. **Green**, occupying the chair.

The minutes of the former meeting were read and passed.

Mr. **Guyton** exhibited a specimen of the Alberttype, and read from the Photographic News the remarks upon the process.

There were likewise shown a number of eight by five transparencies by Mr. Phipps; sundry recently taken prints by Mr. Guyton; a specimen of the Eburneum process by Mr. Hogg, shown by Mr. Murray; and views in Wales, size twelve by ten, by Mr. Tyrer.

The Rev. T. B. **Banner** stated that, in a recent visit to the English lakes, he had taken twenty-one plates of the Liverpool Company's preparation, and had brought back twenty-one negatives, prints from which, beautifully mounted and bound in a handsome volume, he exhibited.

Mr. **Walmsley** showed some negatives by the coffee process, and one on which gum tragacanth had been employed as the preservative.

Mr. **Adin**, the Secretary of the Manchester Photographic Society, who was present, exhibited an enamel portrait.

The **President** exhibited some stereo and twelve by ten views, one of which was the picture of the tomb of Sir David Brewster at Melrose Abbey. He also exhibited some stereoscopic views printed on Durand sensitive paper.

Mr. W. H. **Wilson** next read a short paper on "An Easy Method of Testing the Strength of Solutions of Nitrate of Silver" (see p. 481), for which he received a vote of thanks.

A final excursion for the year was talked over, and the arrangement left to the Secretary.

The **Chairman** announced that the presentation prints for the present year were finished, and would be ready for delivery at the last meeting of the year, in November.

This concluded the business of the evening, after which the meeting adjourned.

Talk in the Studio.

Mr. Brooks' Prize Landscapes.—We have been favoured by Mr. Brooks with copies of his landscapes, "The Landsend Road, near Penzance," and "Bleu Bridge, near Penzance." Mr. Brooks received the first bronze medal for landscapes at the Royal Cornwall Polytechnic Exhibition, an award most worthily bestowed. More perfect landscape photography, both in choice of subject, artistic treatment, and photographic rendering, could not be well conceived or desired. The subjects are both, more or less, of the class known as "close scenes," in photographs of which blackness, hardness, and want of delicacy often prevail. The perfect detail and rare delicacy, combined with richness, force, and atmosphere, are admirable. We shall be glad to hear from Mr. Brooks something of his mode of working.

Vincent's Vade Mecum.—We have received from Mr. Vincent, optician, of Liverpool, an example of what he terms his *Vade Mecum*, which consists of a tourist's telescope and microscope, which pack up conveniently in one case. Considering the amazingly low price of the two instruments, the excellence is very great. The *Vade Mecum* will form a capital present for a boy.

Bi-coloured Stereographs.—Col. Sir H. James's recent letter in the *Athenæum* has called forth the following letters to that journal:—"Mr. William Pink, writing from Wimbledon, says, 'In reply to a letter which appeared in your journal of Saturday last, respecting coloured slides for the stereoscope, I beg to say that I have one in my possession, a representation of shells coloured in the manner there described, *i.e.*, the two halves of different hues, and which in the stereoscope blend together; which slide has been mine for the last seven years. The process mentioned by your correspondent is, therefore, no novelty.' Dr. Phipson, of the Laboratory of Analytical Chemistry, Putney, referring to Col. James's inquiry whether this idea is new, writes thus:—'About twelve years ago I saw, in Paris, stereoscopic slides (card slides) the images of which were vividly coloured in the various *complementary* colours. For instance, one proof, which represented a marble statue, had one of its images *red* and the other *green*. In the stereoscope these two colours disappear, and the image appears white.' Mr. Stroud L. Cocks, writing on the same subject, says, 'Charming sunset and moonlight effects may be produced by simply interposing between the light and the transparent view slips of crimson or pale blue glass: fresh beauties are always apparent, especially in the views of Alpine scenery. I have also applied this mode of tinting to photographs, when exhibited in the oxy-calcium lantern, and with excellent effects.'"

Permanganate of Potassa as a Test for Distinguishing Chlorine, Bromine, and Iodine.—The *Chemical News*, in an abstract of an article in the *American Journal of Pharmacy*, by Mr. G. Macdonald, says:—"The author has investigated this subject carefully, and made a series of experiments, the main results of which are, that this method of distinguishing, by means of the reaction produced by permanganate of potassa, between the three haloids above named, is only applicable to very dilute solutions, and, even then, care must be taken that the permanganate of potassa is also in very dilute solution, and added drop by drop, as any excess beyond what the iodide or bromide would decompose would be apt to give the liquid its own characteristic tint. Moreover, the method is applicable to simple solutions of haloid salts, and its use implies some previous knowledge by the operator, both of the composition and the strength of the solution under examination. In a compound solution of a chloride and iodide, this test, *per se*, would be of but little use, as only the presence of the iodide would be indicated, and recourse to other methods would be necessary for the detection of the chloride. In a solution containing no haloid whatever—as, for example, a solution of a nitrate or a sulphate—this test would indicate the presence of a chloride—that is, no change would be produced on the addition of the permanganate. In a solution containing organic matter, the test would, in many instances, be rendered worthless, since the permanganate is readily decomposed by such substances, with changes very similar to those produced by the action of iodides or bromides.

Matt Silver Stains.—Amongst other remedies for matt silver stains, the following are simple, and should be tried first:—1st. Immersing the plate in the solution before it is too dry, as by that means there is a larger amount of ether, &c., to get rid of in the bath, and the film is more permeable. 2nd. Keeping the plate in motion whilst in the bath, frequently moving it in and out, and taking care not to remove it finally until the solution flows freely over the surface. 3rd. The addition to each ounce of the collodion of one drop of distilled water; this is of use only when the repulsion arises from the use of too much ether or anhydrous alcohol. 4th. The agitation of the collodion with about half a grain to each ounce of carbonate of potash, allowing it to stand for twenty-four hours, and then decanting from the sediment. This will make a horny and gelatinous collodion limpid and permeable. It will sometimes, also, cause it to fog. In such case a little tincture of iodine should be added, which will generally effect a cure.

Electro-Plating of Paper or other Fibrous Material.—The *Druggist's Circular* says:—"A mode has been devised for depositing copper, silver, or gold, by the electric process, upon paper, or any other fibrous material. This is accomplished by first rendering the paper a good conductor of electricity without coating it with any material which will peel off. One of the best methods is to take a solution of nitrate of silver, pour in liquid ammonia till the precipitate formed at first is entirely dissolved again; then place the paper, silk, or muslin for one or two hours in this solution. After taking it out and drying well, it is exposed to a current of hydrogen gas, by which operation the silver is reduced to a metallic state, and the material becomes so good a conductor of electricity that it may be electro-plated with copper, silver, or gold, in the usual manner. Material prepared in this manner may be employed for various useful and ornamental purposes.—*Chemical News*.

The Sun's "Glory."—The conclusions of the American astronomers as to the nature of the brilliant protuberances and the aureole which surround the sun on the occasions when it is eclipsed are not allowed to pass unquestioned by French *savants*. At the last meeting of the Académie des Sciences, M. Faye called the attention of the members to the results of the observations made on the occasion of the last eclipse. He said that M. l'Abbé Moigno had placed the photographs of the sun taken by the American mission at his disposal. After remarking on the peculiar appearances presented by the protuberances, one of which he likened to the masses of vapour that are sometimes seen floating over water, another to a whale with an enormous tail, he said of the latter:—"This protuberance was 70,000 miles in length; its total volume, making all allowances, would be 50,880,000,000 cubical miles." As those protuberances could now be examined at leisure, the chief interest was centred in the golden ring which surrounds the black disk of the moon during an eclipse. Professor Young's conjecture that the brilliant rays which constitute this ring are a permanent aurora borealis, the result of incessant electrical discharges similar to those seen in the Arctic regions, is disputed by M. Faye, who thinks the conclusion is not warranted by what is known of the constitution of the sun. As for Mr. Pickering's statement that the solar crown gave no trace of polarization, the same learned *savant*, who has made the sun his peculiar study for many years past, conceives that Mr. Pickering is mistaken in his opinion on this matter, and he brings in support of the opposite supposition (for it is difficult to call it by any other name when the contradiction between scientific observers is so absolute) the observations made by M. Mauvais in 1852, and by M. Prozmowski in 1860. It is asserted, apparently for the purpose of explaining how Mr. Pickering fell into the error imputed to him, if error it be, that he used an instrument for making his observation which destroyed the polarization. Seemingly with the view of appeasing any pain that the discussion might cause to the susceptibilities of the American observers, they are congratulated on having enriched science with photographs of fleeting phenomena most valuable for present study and future comparison.

Progress in Photographic Optics.—The achromatic combination devised by Dolland and manufactured by Ross and Chevalier was a vast step in its time, both in microscopy and astronomy, as also an aid in naval and military tactics; this and the common and single objective were used by the first Daguerreotypists and photographers, but they were found much too slow in portraiture; and besides this they had, more or less in general, two foci, a chemical and a visual focus, and objects were distorted by reason of the non-correction of the spherical aberration, especially, of course, in the single lens. If the Dolland lens had received no change or improvement, photography would have been limited to the field. But necessity educates artists and artisans; physico-mathematicians—or, perhaps better, mathematico-opticians—reconnoitred the ground, investigated the existing interruption to further advances, found remedies, and calculated formulæ. It is to Potzval we owe the first thanks for projecting a lens for taking portraits; he was the genius, and Voigtlander the workman; the former devised and drew the plan, the latter executed the workmanship. They both were indispensable; but the architect stands on higher ground than his masons and carpenters. Petzval and Voigtlander stand in the same condition with each other in reference to the portrait combination as Dr. Black and Watt in reference to the steam engine, or as Professors Henry and Morse to the telegraph. Geniuses devise, men of discipline carry out. The Dolland lens and the Petzval lens have both been considerably improved for taking respectively landscapes and portraits; the former, in the first place, by Petzval in the orthoscopic lens, afterwards by Schnitzer and Harrison, who gave us the ingenious, symmetrical globe lens. These were great improvements on the old opera-glass combination. The next improvements, and the last ones up to the present moment, are those of another genius and patient investigator, Dallmoyer. Dallmoyer, too, has put a master's touch on the Petzval lens, and changed its nature. From this great optician we derive the triplet, the wide-angle, and the rectilinear lenses for landscapes, and the diffusion lenses for portraiture, all of which are impressed with originality, and are unsurpassed.—*Professor Towler.*

Public Influence on Photography.—We must not forget the part which the public themselves, however unconsciously, have taken in raising the sickly infant of photography to its present gigantic stature. Photography is, like food and raiment, a necessity; and necessity educates tailors and bread bakers in all climes. There is no hovel so mean as not to be decorated with a card picture or a tintype; there is no lover so demoralized that does not wear his lady-love's picture as a talismanic gem next to his heart. The public have already done much in making the photographic art a healthy institution; but they can now exert a much more extended influence over photographers themselves by demanding more art in the card or cabinet picture, and more style in composition; they can, if they choose to do so, make artists of photographers.—*Professor Towler.*

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To Correspondents.

W. W.—Some time will probably elapse before carbon printing entirely supersedes silver printing, but we think that there is little doubt that it will eventually do so, for portraiture as well as other branches of photography. Good carbon prints are just as soft and beautiful as silver prints. Any tone can be secured in carbon prints, inasmuch as all the range of pigments used by painters may be employed in what is termed *carbon* printing. *Pigment* printing is really a more descriptive term. 2. Nothing is better than permanganate of potash for removing organic matter from water, either before or after distilling. Permanganate of silver may be used for purifying water for photographic purposes, where distilling is inconvenient. 3. For small presses we prefer glass beds, as they answer well, and are so easily kept clean. We do not know who now keeps them. The mounting machine to which you refer was ingenious, but never came into general use. 4. If the edging be applied after the plate is coated, india-rubber solution will serve; but if the edging be applied before coating the plate, dilute albumen is better, as the india-rubber is in some degree soluble in the solvents of the collodion. Opal pot-metal can doubtless be obtained of photographic dealers; we know that it can be obtained of Claudet and Houghton. There are several good printing frames for the purpose; we cannot say which is best. We have not made comparative trials of the collodio-chloride of silver you mention. 5. For experimental purposes or unusual modes of lighting, glass on the whole of the north side will be convenient. It is customary to have a portion at each end opaque, in order to save trouble in the ordinary practice of portraiture. The development question shall have our further attention in due time.

Eon.—The paper with a matt surface of enamel is frequently used by lithographic printers for fine work; by whom it is manufactured or sold we do not know. 2. In attempting to make permanganate of silver you have not followed instructions. The precipitate is doubtless, however, a small quantity of permanganate of silver. The solution still contains, probably, a trace of permanganate of silver and of permanganate of potash. 3. It is somewhat difficult to say what the product may be of the singular mixture you describe. 4. The addition of nitrate of ammonia to nitrate of silver should not cause any precipitate, and the bath you describe, although weak, ought to have given you a picture. You have probably made some mistake in the materials employed. We have not had time to examine carefully the small sample of precipitate sent; it seems, however, to contain iodide of silver.

Chloride.—If excess of water be used, the chloride of silver goes down very slowly. Use no more water than is sufficient, and when the precipitate remains very long suspended add a few drops of nitric acid. The print was duly forwarded.

One Who Tries.—It is impossible to state the exact distance at which the glasses of a combination should be placed, which we have not seen, and in regard to which we have no data. You may ascertain by a few trials with a pasteboard tube.

G. C. (Southgate Road).—We have no certain knowledge at present, but think that it probably will. It will be duly announced in our pages.

C. W. S.—Your formula appears a pretty good one. The tone, the purity of the whites, and freedom from stains depend chiefly on careful manipulation, proper time of exposure, development, &c. To secure freedom from stains, be very careful not to touch the back of the paper with any of the solutions, except, of course, the fixing bath. Wash the print well after development, before immersing in the fixing bath. To secure clean whites, be very careful that no white light reach the prepared paper during any of the operations. The addition of a little acetic acid to the gallic acid is sometimes useful; or the addition of a few drops of a two-grain solution of bromide of potassium. If the prints are immersed in a gold toning bath, after fixing, whilst any trace of the hypo remains in the paper, the print will become stained and yellow. The print should be very thoroughly washed before placing in the gold bath. But if the exposure be right, it is possible to get a very good tone in the process of development without gold toning. Over-exposure and short development tend to produce red tones, shorter exposure and prolonged development will tend to produce black tones. The addition of a little gelatine or Iceland moss and a little citric acid to the salting solution will tend to produce vigour, and aid in getting black tones.

Ennel.—We have occasionally seen an effect produced on a film similar to that of which you enclose example, and produced by similar means; namely, leaving the plate too long in a solution of bichloride of mercury. It has generally occurred when the solution has got under the film.

Ed. Seeley.—So far as we remember, Messrs. Robinson and Cherrill attach paper—when it is used in front of the negative—at the edges or corners only, so that there is no risk, no matter what material is used. 2. We have found the tendency in the film to leave the paper in some samples of Obernetter's collodio-chloride paper, but not in all. The evil is by no means a necessary one; but there is always a danger when an enamel surface is used as a support for the collodion film. It is the substance of the enamel which, being partly soluble in or permeable by water, causes the film to leave the paper. With matt collodio-chloride paper no such difficulty exists.

B. Wyles.—With a front light such as you are using we can well understand that you have much difficulty to secure delicacy, vigour, and fine modelling; although, in a few of the examples sent, these qualities are embodied. The proposed alteration will, we think, effect an improvement; but, under the circumstances, as the change is necessarily somewhat of an experimental character, we can scarcely counsel the use of ground glass, which is costly, and may not answer the purpose well. If you first try clear glass, and gradually stop the light out as you find it required, you may probably arrive at a very good result. You may produce an admirable imitation of ground glass by grinding up a little zinc white in mastic varnish, and dab it on the glass, so as to produce a stippled effect.

G. R. B.—In the case in question the triple is the quicker; in what ratio we cannot with exactness state. 2. The triple would include less subject than the other "wide-angle" construction. 3. Yes; the 6¾-inch focus would include most subject on the same sized plate. 4. The triple would be the more generally useful of the two. 5. Except where much subject is required, or the subject to be taken is in a contracted position, we do not recommend the use of wide-angle lenses. 6. The triple is as suitable for copying and architecture as the other. 7. No; the triple is, in that respect, quite equal to the other.

G. Croughton.—Many thanks. The examples are admirable. We will write shortly.

T. Gulliver.—Many thanks.

J. Guyton.—Duly received. Many thanks.

Our Presentation Prints.—Copies of Herr Albert's print have been despatched to all who have made application, in accordance with our last week's announcement.

Several Correspondents in our next.

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Photographs Registered.

Mr. J. **Port**, Stonehouse,
Three Photographs of Floral Designs.
Mr. F. **Downer**, Watford,
Four Photographs of Earl of Essex, &c.
Mr. D. **Phillips**, Aberdare,
Photograph of St. Fagan's Church.
Photograph of St. Fagan's Schools.
Photograph of Aberdare British Schools.
Photograph of Mr. and Mrs. Llewellyn's Wedding Party.
Mr. **Appleyard**, Brighouse,
Four Photographs of Gatehouse of Kirklees Priory, &c.
Mr. B. **Yate**, Stonehouse,
Four Photographs of Floral Wreaths, &c.
Mr. Evan **Griffiths**, Truro,
Photograph of Self.
Mr. J. **Stuart**, Glasgow,
Two Photographs of Rev. Andrew Bonar

THE PHOTOGRAPHIC NEWS.

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CONDENSING MAGNESIUM SMOKE.

The greatest drawback to the use of the magnesium light in photography is not so much the expense, as the difficulty created by the rapid generation of a dense white smoke, which must be got rid of, or it brings a speedy end to photographic operations; and this difficulty is most fatal in the circumstances in which the aid of magnesium is of the most vital importance: we mean in photographing interiors of churches, tunnels, caves, mines, &c. When a magnesium lamp is used in an ordinary apartment, it is not difficult to attach a flue or chimney, whereby the products of combustion may be carried into the open air; but in dark interiors of any kind, where access to the open air, by means of pipes, is not easy to secure, the dense white smoke rapidly fills the air, and interposes itself as an opaque white cloud, which becomes one of the most prominent objects in the picture.

A means, then, of getting rid of this smoke by condensation or absorption is exceedingly desirable. Even in an ordinary apartment, the necessity for putting up and taking down, and for establishing *en permanence*, a few yards of iron tubing to serve as a chimney, is not always convenient, and if a condensing arrangement could be attached to the lamps there is little doubt that the value of magnesium as a means of illumination would be considerably enhanced. We recently described an arrangement by Mr. Proctor for producing satisfactory portraits by this light, and, by a slight modification of the small apartment of which we gave a diagram, we now learn that Mr. Proctor proposes to use magnesium light instead of sunlight for copying. For enlarging, the value of this light has already been recognized.

Getting rid of the smoke remains the chief difficulty. Various plans have been proposed, but no really good plan has come into use. The American Magnesium Company have recently introduced a smoke condenser, which seems, however, the most simple and practical of any yet brought before the public. It is described in our Philadelphia contemporary as follows:—

"The smoke condenser for condensing the smoke of burning magnesium is simply a bag or drum made of common cotton cloth, about forty-eight inches long and eighteen inches in diameter, distended by hoop-skirt wire. This is hung up in the room, or laid upon a table or shelf, or even on the floor, though it is better to have it somewhat higher than the lamp. The chimney of the lamp is connected with the drum by a piece of tubing. Any person can make one.

"The principle upon which it works is this: the smoke, consisting of the oxide of magnesium and common air, enters the drum, where the air separates and passes out through the cloth, leaving the oxide on the inside. The draft is very uniform, and the lamp burns much more steadily and reliably than without the condenser, as it is called. Now, a magnesium lamp and lantern can be taken, and an exhibition held in any small room or parlour without the least inconvenience from the fumes of magnesium."

We have reason to believe that Mr. F. W. Hart, to whom photographers are indebted for many ingenious contrivances in connection with photographic apparatus, has a simple and effective method of condensing magnesium smoke, which he has not yet introduced to the public. The expense and inefficiency of our patent laws, and the absence of any available method whereby an inventor, in a case like this, may secure the reward of his skill and labour, we believe, are partly answerable for the fact that Mr. Hart has never brought out this invention. The first production of the apparatus would necessarily involve expenditure of time and material in experiment, making models, and determining the most convenient conditions. As the matter stands, this would be no sooner done than some other manufacturer, without the expenditure of time, material, and brains in experiment, might at once copy the apparatus, introduce it at a less price, because the *idea* cost him nothing, and leave the inventor with his labour for his pains. He might, it is true, patent the invention at a cost greater than the probable amount which the sales would realize; but whether he gained or lost by the transaction he would be railed upon by some for his illiberality in not giving the public the fruits of his labour. Nevertheless, we wish some means could be devised whereby the public interest and that of Mr. Hart could be served at the same time, by the introduction of his method of suppressing the smoke nuisance. Possibly if all who already use the magnesium lamp were to make application to Mr. Hart, so as to guarantee at least some appreciation and remuneration, he might be induced to bring his invention into the market.

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ON PRODUCING PHOTOGRAPHS ON IVORY.

IN THREE PARTS.

Part III.—Miscellaneous Processes.

Iron Printing.—Several of the iron printing processes have been employed for printing upon ivory with more or less of success. In all cases it is desirable after the ivory tablet has been scraped and polished that it should be sponged with alcohol and water, to remove everything like greasiness, and ensure the regular flow and absorption of aqueous solutions, otherwise stained and imperfect images will inevitably be produced.

A method described by Mr. J. Lawrence, an American miniature painter, gives an image in a delicate tint of Turnbull's blue. Some painters prefer working on a ground of this tint, but, unless very skilfully managed, the finished pictures are apt to look cold. Mr. Lawrence describes his operations as follows:—

"The process is simple, and consists in immersing the ivory, already ground and prepared for painting, in a solution of double oxalate of iron and ammonia. The side of the ivory which lays downwards in the pan should be marked in the corner with pencil, so as to expose the opposite surface for printing. It requires to be immersed from two to three days. When dried it will require an exposure in the sun varying from forty-five minutes to one hour to obtain an image. Develop by immersion in a solution of oxalic acid and red prussiate of potash, watching the progress, and afterwards wash in pure water for a few minutes. When dry, the excess of oxalate of iron and ammonia can be brushed off with a hard bristle brush. If, after development, the print should be found too intensely blue, make a very weak solution of cyanide of potassium (say a piece as large as a pea, dissolved in six ounces water), and immerse the ivory therein, keeping it in motion, and watching its fading. When sufficiently pale, wash in clear water, and dry in a shady place."

Professor Schwartz gives a modification of this process, in which no development is necessary, the image being produced of a blue tint by the direct action of light, the print being fixed by simple washing. The solution to be used is prepared as follows:—

Perchloride of iron (neutral and crystallized	78 grains
Oxalate of ammonia (crystallized)	71 ,,
Red prussiate of potash	73 ,,
Water	23 ounces

The solution must, of course, be kept in the dark. It is better applied by brushing, allowing the solution to remain on the surface until it is pretty well soaked. When exposed it produces a blue image; and, as we have said, simple washing fixes it.

Dr. Phipson's iron printing process seems to be well suited for ivory printing, as it gives a warm-toned, good image. As, however, we have not tried it on ivory, we can only make the suggestion here, and print his mode of working:—

"The first thing to be done is to prepare a concentrated solution of oxalate of peroxide of iron. For this purpose I take a solution of chloride of iron, and having precipitated the peroxide of iron by ammonia, I collect it upon a filter and wash it with boiling water, after which this acid is dissolved in a warm concentrated solution of oxalic acid. A beautiful emerald green solution is thus obtained, which must be concentrated a little by evaporation, and then set aside in a dark place for use.

"The paper destined to receive the photographic image is floated for about ten minutes upon the green solution of oxalate of peroxide in a flat dish or capsule, to which a certain quantity of oxalate of ammonia has been added; the whole, of course, being kept away from the daylight, and at the expiration of that time the paper is taken out of the solution and hung up by one of its corners to dry.

"The paper thus prepared is placed behind the negative and exposed to the light for ten or twenty minutes, according to light. It is then well washed with distilled water or with rain water (spring water will not answer, on account of the lime it contains, which decomposes the image by forming oxalate of lime). All the non-decomposed oxalate of peroxide of iron is thus washed from the proof, and a feeble yellow image of oxalate of protoxide, scarcely visible, is left upon the paper.

"The faint yellow proof is plunged for a little while into a solution of permanganate of potash to which a few drops of ammonia have been added. In this bath the image soon becomes brown and distinctly visible; it is then withdrawn, washed, and plunged into a solution of pyrogallic acid, where it is allowed to remain for half-an-hour, after which it is taken out, washed, and dried.

"The image thus developed is a very dark brown, and can be distinguished with difficulty, by inexperienced eyes, from proofs obtained with silver. The tones are peculiarly soft and permanent in the proofs I have made."

One additional remark concludes our *resumé* of photographic operations on ivory: it should always be remembered that ivory becomes yellow and discoloured in the dark, but preserves its pure whiteness when exposed to the light. Ivory photographs will, of course, share the same fate; and if kept closed up from the light, will acquire a yellowness which suggests fading, but which is, in truth, the ordinary discolouration of ivory kept from the light.

WONDERS OF PHOTOGRAPHY.

It always affords us pleasure to find the general press tending to popularize photography, and spread a knowledge of its history, technics, and applications amongst the public at large. This pleasure is, unfortunately, frequently alloyed by noting points of inaccuracy, either in conception, or statement of fact, in articles so dealing with photography in outside literary journals. In an interesting publication, for instance, entitled "The World of Wonders," issued by Messrs. Cassell, Petter, and Galpin, we find an article on the wonders of photography. After referring to Dr. Taylor's dioramic photographs, described in detail in our sixth and seventh volumes, it proceeds:—

"Next to the above in curious interest is what may be called microscopic photography, or the reduction of large objects into such small dimensions that the picture is invisible to the naked eye. Mr. Shadbolt, in 1854, was the first who executed these small photographs by making an achromatic object-glass, one or one and-a-half inches focus, the lens of a camera, and using a peculiar kind of collodion. His portraits varied from one-twentieth to one fortieth of an inch in diameter, and would bear to be magnified a hundred times. Mr. Dancer, of Manchester, produced a family group of *seven full-length photographs* in a spot the size of a pin's head; and he states that it is only a question of trouble to include 10,000 portraits in a square inch. Ten years ago it was suggested that a diplomatic despatch might be conveyed in a spot no bigger than a full stop. Since that time the idea has been worked out in a variety of ways, a full page of the *Times* newspaper, or an extensive landscape, having been photographed in so small a space."

As the whole practice of photographic portraiture consists in the production of reduced images of larger objects it becomes somewhat unimportant to assign the date of the first infinitely little photographs. We remember that long before the collodion process was discovered it was not uncommon to produce Daguerreotype full-length portraits, groups, &c., for studs, finger-rings, pins, &c., so small that a magnifying glass was necessary to distinguish the features. But in referring to the records we find the first published allusion to the production of minute photographs for microscopic examination was made in the *Photographic Journal*, April, 1854, where Mr. Shadbolt is mentioned as having exhibited some examples. The first communication on the mode of producing such pictures was made in April, 1856, by Mr. Samuel Fry, and twelve months afterwards Mr. Shadbolt described his method before the Photographic Society. Subsequently, Mr. Sidebotham, at the Manchester Photographic Society, claimed for Mr. Dancer the earliest attempts at the production of minute pictures, stating that he commenced experiments in this direction as early as 1839. Mr. Sidebotham had in his possession examples Mr. Dancer had given him early in 1853, in which a family group was included in a space of one-sixteenth of an inch. Sir David Brewster made a calculation that a twenty-volume encyclopœdia could, by Mr. Dancer's method, be reduced to dimensions suitable for carrying in a purse. The article from which we have been quoting next proceeds:—

"The enlargement of photographs, though less wonderful to the common apprehension than their reduction to the infinitely small, is, practically, not less interesting than curious. These enlarged pictures were first exhibited by M. Claudet at the *soirée* of the British Association in 1862.

By means of the solar camera, photographic cartes were magnified to the size of life. The effect, when first seen, was pronounced very striking and beautiful. M. Claudet, at the same time, also exhibited some photographs, taken by the Count de Montizon, of all the most curious animals of the Zoological Gardens, and instantaneous views of Paris by Ferrier, showing the Boulevards full of carriages and people, as they are in the middle of the day."

The historical error here is much greater than before. The earliest successful experiments in photography were efforts in enlarging, the solar microscope being practically the first camera employed. One of the earliest developed photographic images ever produced was an enormous enlargement of a flea, by the Rev. J. B. Reade, which was produced in June, 1837. The labours of Kingsley, Delves, Wenham, Woodward, and others in producing enlargements were all many years anterior to the date above given. The next paragraph proceeds:—

"But the most striking photographs of this topographical character are those which have been taken in balloons floating some 4,000 feet above the earth. The first experiments of this kind were made by Mr. Negretti in Coxwell's 'Mammoth' balloon in the summer of 1863. They were regarded with much interest at the time, as several problems were involved in success or failure—such, for example, as the difficulty of operating at all in a moving tent, and the question whether the actinic power of the solar rays would be as effective up aloft as on the surface of the earth. It was not only the onward motion of the balloon that created a difficulty, but its *rotating* motion, to obviate which a good deal of ingenuity in constructing and working the apparatus was needful."

The date mentioned as that of the earliest experiments of this kind is again erroneous. The earliest experiments in balloon photography were made in 1860 by Mr. Black, of Boston. We have in our possession examples of the results obtained, and a record appears in our pages at that date and also in the following year. The next paragraph is as follows:—

"One more of the surprising effects of photography remains to be mentioned here, viz., its application to illustrate geometrical figures and problems. This followed rapidly upon the discovery of the principle of the stereoscope. Every one who has gone through the eleventh book of Euclid is aware of the great difficulty which is superadded to that of the problem itself by the number of lines crossing each other on a flat surface. By producing these lines on stereoscopic slides they are made to appear as if the figure was made of wires stretching from point to point in space. Planes are seen to intersect each other with as much distinctness as if they were sheets of cardboard inclined at various angles; and solid angles and pyramids have their edges and angular points in such tangible relief that a model could not afford a better illustration of the text. The letters, too, are so contrived as to appear to belong to the points to which they refer, and to stand out at the proper distances from the spectator."

The only error here is connecting the valuable stereoscopic diagrams with photography. They are produced by hand drawing, and printed by ordinary presses, photography not being used in their production at all. The article concludes with an interesting and correct notice of some of the experiments in grotesque photography which have been made, as follows:—

"Before concluding this article, we may also notice some remarkable instances of grotesque or caricature photography. When the lamented Abraham Lincoln was president of the United States, his photographic portrait was exhibited, and to the naked eye appeared as if pitted with the small-pox. On examining the dots with a microscope, they were found to consist of portraits of generals, politicians, divines, poets, actresses, and other well-known characters suitably placed. Jeff. Davis would be found in the president's eye, McClellan on the tip of his nose; Miss Cushman, or some other sweet thing, on his lips, and so on. All these likenesses were said to be very striking, and the whole caricature was regarded as a felicitous performance. Something of the same comic character was done in Rome, when well-known figures, suggestive of a satirical application, were published with the heads of public characters. Thus the face of Antonelli appeared on the shoulders of Fra Diavolo; and the Queen of Naples was made to figure as Moll Flagon. Even the Pope himself was not spared. The speedy result, however, was a Papal edict against the enormity, by which the photographic artists were subjected to the loss of their places and instruments, a fine of one hundred dollars, and a year in the galleys! The models who dared to sit for such figures were denounced in the same penalties."

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THE FRENCH PHOTOGRAPHIC EXHIBITION.

[FROM OUR OWN CORRESPONDENT.]

A second visit to the exhibition has enabled me to form a more complete and, I believe, truthful judgment of the pictures shown. A lengthened and, I may even add, tedious and wearisome examination was rendered necessary by the faulty manner in which the collection has been catalogued and arranged. This is a point upon which it is impossible to congratulate the executive of the French Photographic Society. A list of names of the exhibitors has been drawn up in alphabetical order, and the pictures sent in are numbered consecutively in such a manner that the exhibits of Mr. B. are invested with numbers following those of Mr. A.; so that if we suppose A.'s photographs to be specimens of enamel photography, while those of B. are transparencies, the Nos. 1 and 2 will, in all probability, be a hundred feet from each other.

The fault does not, however, end here, for prints of the same description are by no means always to be found together; and, therefore, although you may be acquainted with the name of an exhibitor, and the number of his picture, the latter is still very difficult to find. Moreover, the number of pictures catalogued and those exhibited do not agree in many instances, while in others prints appear without any number at all. These are the main incidents of which I have to complain, and in consequence of which no inconsiderable amount of time is wasted on the part of visitors.

All pictures sent in were subjected to the criticism of a hanging committee before acceptance; this committee have apparently, and with perfect right, been exceedingly lenient in the performance of their duties, and a collection of productions of almost every variety has thus been secured.

I will begin with photo-mechanical prints, as there are by far the greatest show of photographs of that description. Albert, of Munich, does not exhibit, but Goupil and Co. show some specimens of Woodburytype well worthy of their names. They are mostly reproductions from paintings and engravings, some being of considerable size. It was possibly an oversight not to exhibit any specimens of portraiture furnished by the process, as that section of the art is considered by many to be the most crucial test to which any method can be put. This is the more to be regretted from the fact that some exceedingly perfect portraits have been printed by the photoglyptique process, as it is called by MM. Goupil and Co. After Woodburytype—very much after it, indeed—come other mechanical methods, all of which differ greatly from the above, partaking, in most instances, of a lithographic character. Tessié du Motay and Maréchal exhibit some good specimens of their invention, some of which are so perfect that, if possessed of little more vigour, they would compare very well with Albert's pictures. Garnier has some pictures of a similar character. Drivet shows a large number of prints, among which is a portrait of some promise; while those of Lœwe, Lemercier, and Baldus leave much to be desired. Other mechanical prints are shown, but are unworthy of notice, with the exception, perhaps, of those of M. Marie.

In enamel photography M. Lafon de Camarsac still reigns supreme. His cases of specimens are of very high merit, and possess a brilliancy, softness, and finish wanting in the enamels of other exhibitors; some brooches and bracelets shown are exceedingly beautiful. MM. Geymet and Alker show a case of enamels, but they are hard and deficient in middle tints, the general fault in this department of photography. The same may be said of the productions of Lochard, Mezzard, &c.

Carbon printing is principally represented by MM. Braun, Despaquis, Edwards, and Jeanrenaud. M. Braun's specimens contain some beautiful examples, and are among the finest in the exhibition; they are all reproductions of paintings, drawings, and sculpture, and do not include any pictures taken direct from nature. The pictures of M. Jeanrenaud for the most part are good, as are likewise those of M. Despaquis; but, as a rule, the carbon prints shown scarcely surpass mediocrity.

As regards landscape pictures, those of M. Harrison are beyond all others, if we except half-a dozen charming little views of the Lake of Geneva by A. de Constant. These latter are from dry-plate negatives, and printed upon plain paper in the manner advocated by M. de Constant in the Photographic News some months back. M. Harrison's pictures put one in mind of the productions of our countryman William England, and this is no mean praise; the prints are mostly from dry plates. M. Taylor, of Marseilles, sends some good examples of his shellac printing process. M. Fridrich of Prague's specimens are good, and would have been almost perfect if possessed of somewhat more brilliancy. M. Civiale exhibits a large panorama taken upon waxed paper. Other pictures do not call for notice.

Of reproductions, there are some fine ones by M. Augerer, of Vienna, and by M. Bruckmann, of Munich. M. Angerer's cartoons are, on the whole, exceedingly beautiful, but we could have wished to have seen specimens of his work undertaken in a different direction. M. Bruckmann's reproductions of Kaulbach's illustrations of the works of Schiller and Gœthe are the best of their kind, although the pictures from the Gœthe gallery are almost too small to do justice to the originals.

Adam-Salomon sends a frame of a dozen pictures, the majority of which were exhibited in London last year, and are almost beyond criticism. M. Rentlinger has three grand frames of cabinet pictures which he knows so well how to produce, and, besides, some larger specimens, measuring perhaps a foot in height. Mr. Briggs, of Leamington, exhibits some examples *à la* Salomon, which are decidedly the best of their kind in the Exhibition, barring those of M. Salomon himself. M. Couton, recently established at Vichy, sends a variety of portraits showing *costumes du pays*, soft and brilliant. M. Bieber of Hamburg, M. Bacot, and Mr. Lewis of Douglas, show excellent examples of portraiture, although in the specimens of the latter gentleman the lens appears to have been slightly strained. M. Walery, of Marseilles, has some large sized portraits of great merit, but his smaller pictures are of inferior production. The pictures of M. Wane, of Douglas, are rather wanting in high lights, but otherwise, are of great beauty. M. Marconi and M. Roussinoff (of Russia) show productions well worthy of inspection, and M. Sarony sends some of his admired photo-crayons.

M. Ferrier and M. Soulier are, as usual, foremost in the production of large transparencies, and divide with MM. Leon and Levy and M. Blanc the honour of showing the best stereo slides. Some of M. Blanc's photographic transparencies are shown twice during the day, enlarged, and projected upon a screen by means of an oxyhydrogen light, the latter being of the improved description invented by M. Tessie du Motay. The glass stereo slides of MM. Leon and Levy are very fine, and an attempt has been made, with some success in some instances, to enlarge the picture seen in the stereoscope. It is a pity that in the beautiful snow scenes the figures should all appear to have the character of sooty sweeps. The smaller pictures exhibited by M. Soulier have all been taken by means of the dry-plate process, even those of an instantaneous character.

M. Niepce de St. Victor and M. Poitevin exhibit examples of what has been done in regard to photography in colours, and M. Girard shows an interesting case of enlarged microscopical objects, the only exhibit of this description in the building.

The majority of pictures shown have, as would be supposed, been produced by the ordinary wet process; but a considerable amount of dry-plate work is exhibited, as, likewise, many prints from negatives taken upon waxed and unwaxed paper.

The exhibitors from Great Britain are only five in number, viz, MM. Briggs, Edwards, Lewis, Sarony, and Wane.

The photographers of Paris certainly seem to have an acute eye to business, and never to allow an opportunity to pass of which they can make some profit. The ink-bedaubed dancing girl, in the marble group before the opera house, must have been, and is doubtless still, a source of considerable profit, especially now that the ugly stain has been effaced. But this is as nothing compared to the Pantin murder, which, by-the-bye, has also proved a golden harvest to journalists *Le Petit Journal*, Alexander Dumas's paper, which sells for a sou, has increased its daily publication from a quarter to nearly half a million, from the fact of its having contained a leader upon the subject every day since the murder. Every police journal—or other illustrated journal, for that matter—has published illustrations of the outrage; but the photographers have now completely beaten the newspapers out of the field, and have not only produced pictures of the scene of the murder, but likewise carte and cabinet views of the six victims as they appeared in the Morgue, *garanti d'après la nature;* and this horrible addition to one's album may be procured from every photographic dealer on the Boulevards and in the principal streets. *Apropos* of the murder, the journals of last night stated that Troppman had consented to have his photograph taken, under the express condition that it should not be published. It is, indeed, an ill wind that blows nobody any good.

Paris, October 12th, 1869.

SKETCHES OF TRAVEL, FROM A SUN-PAINTER'S PORTFOLIO.

BY STEPHEN THOMPSON.

No. 8.—An Archæological City.

"Sad Ravenna," once the capital of the Western empire, the seat of the Longobardic kings, and the metropolis of the Greek Exarchs, contains, moreover, tombs of the Cæsars. It may be described as a fossilized city, crowded with antiquities which have undergone but little change, but that time brings, since the days of the Roman emperors. A visit to Ravenna is not simply a walk back into the middle ages, but a walk through them and out again at the other end. It is a depressing place to all those who do not possess a special taste for archæological studies, and about as refreshing as a sunless day spent in the vaults of the British Museum. The discordant incongruity of the present contrasts painfully with Ravenna's past. It would be merciful and appropriate if old cities like this, after having served fourteen centuries for the use and pride of men, could be released from all further service in their old age, and left to gentle, unmolested decay. They should be locked up quietly within their walls, and left without any harder presence to vex them in their decrepitude than that of a grey old custodian, who would come to the gate with clanking keys and admit the wandering stranger if he gave token of a reverent sympathy, just to look and muse a little while on the revered desolation. It is a shame to try and spur these sad old towns into an unnatural activity and petty commerce, when they evidently long ago made their peace with the world, and would fain be mixing their bricks and mortar with the dust of those who once inhabited them. I dare not even touch upon the historic monuments of Ravenna, they are so numerous. An archæological society might spend the long vacation here without exhausting them. But there is not a decent *inn* in the place, though it is considerably overchurched. You may work very hard if you are great upon churches; there is little to disturb you. A parchmentized priest or a whitehooded monk will sometimes startle you out of a brown study on the merits of Byzantine architecture and Mosaic decoration, by stealing noiselessly out of one cloister doorway and gliding equally noiselessly through another, raising much the same kind of feeling as that experienced, during a day's fishing at home, by a water-rat occasionally popping out of one hole in the river-bank and disappearing down another.

Photography is here! The old familiar scent of collodion—quite distinguishable from the vapours of yesterday's frankincense and benzoin with which they smoked the bishop—crossed my path the first day. Its fumes wander at will through the fissures of the marble sarcophagus of the Empress Galla Placidia; and in the Corsa di Porta Nuova, over the porphyry urn which contained the ashes of the great Emperor Theodoric, a Romagna photographer hangs daily a frame of detestable specimens achieved with the poorest instruments.

One misses the photography of Venice. Ravenna is not all flushed over with the opal lights of poetry and romance like Venice, though she is not without her memories of that kind. Here is the tomb of Dante! Bocaccio blended Ravenna with his pages! I stepped into the little haberdasher's shop where Byron lodged and bought a cotton bandanna, *colaratc stuffi*, for a few centisimi. There is nothing remarkable about it save its dirt. Yet Byron lodged here nearly a year, and wrote a canto of *Don Juan* and the *Falicro*, ere he removed to the Palazzo Guiccioli just by, and became *cavaliere servente* to the Countess of that name, whose "Recollections of Byron," recently published, elicited the paper in *Macmillan* that set the literary world ablaze. Byron liked Ravenna, lived two years in it, and quitted it at last with regret and gloomy forebodings which were fully realized.

Ravenna is a disappointing place for photography, notwithstanding. Picturesque views are few indeed; of architectural studies the number is endless. But the sale of such works, notwithstanding all that may be said to the contrary, is not remunerative generally. Men like Mr. Street, Mr. Ruskin, and some others, will admire them greatly, and, what is more to the purpose, buy them; but there it ends. Such limited audiences, however appreciative, do not fill the artist's gallery any better than the production of really high-class dramas do another kind of gallery, and the boxes alone rarely pay. "'Tis true 'tis pity," but so it is. The fact is, it requires not only a special taste and aptitude, but also a special education, and that of no ordinary kind, before such things can be appreciated and enjoyed. Thus the stimulus which brings people to the purchasing point of admiration is wanting. The beauties of Swiss scenery can be appreciated at once by travellers of any intellectual calibre without previous study. To Brown, Jones, and Robinson, Paris is Paradise, and the Alps more picturesque than the opera. Yet it is curious to reflect how recent and modern is the delight in beautiful scenery. Until the present century, how rarely you find any allusion to scenery whatever in its current literature! It is a thing of yesterday. It would be curious to trace how much of it has been developed, nourished, and fed by photography during the last dozen years. Cheap art in painting is always bad art. Good paintings seen occasionally, but not possessed, leave less influence on everyday people than the cheap transcript from nature or reproduction always before them

The celebrated pine forest of Ravenna will furnish a few pictures. It stretches along the shores of the Adriatic for a distance of twenty-five miles, and no forest is more renowned in classical and poetical interest. By day the shrill cicalas make one ceaseless song, and by night the fire-flies skim around, and the delicious southern feeling steals over one which makes a return to the musty streets of Ravenna repulsive.

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MR. WOODBURY'S PROCESS IN PARIS.

A writer in the *Patrie* gives an interesting account of the operations in working Mr. Woodbury's process at Messrs. Goupil's, the *concessionaires* of Mr. Woodbury's French patent. After a rapid *resume* of the early history of photoplasty, in which he gives to M. Poitevin the credit of the original idea of such an art, he says:—

"Poitevin is, then, the Christopher Columbus of the great discovery, an Englishman (Woodbury) being the Amerigo Vespucci. His conquest is summed up in a few words.

"Expose to the light, under a photographic negative, a plate of gelatine made sensitive by bichromate of potash. Clear the image by washing off all the particles remaining soluble. Let it dry. Apply it to—or, rather, place it on—a plate of metal, and, by a powerful pressure, cause it to print an intaglio on the plate. Such are, in fact, the operations now performed daily at Asmeres, in the studio of MM. Goupil, under the direction of M. Rousselon, who has given, and is still giving, them each day perfection of a kind to cause, without doubt, admiration and astonishment to even Woodbury himself. In fact, all is henceforth made practical, sure, and rapid; and one cannot feel surprise in seeing the different phases of this art becoming a regular and practical industry without all the tronble of sun-printing, which is long and tedious. From the moment the image is obtained upon the gelatine plate, sensitized by bichromate of potash, and washed free with water from all soluble particles, all goes well and with mechanical rapidity.

"This transparent curled and puckered film holds in relief that which is the reproduction of the photographic image. This is, as we have said, placed in contact with a plate of metal composed of lead and common antimony, the identical substance which forms the foundation of the types for typographical printing. It is submitted to a pressure of 1,000 kilogrammes to the square centimetre in a hydraulic press, and in a few seconds this powerful engine has produced an engraved intaglio plate which reproduces in the smallest shades the most delicate details of the photograph. As to the sheet of gelatine, thanks to its inexplicable elasticity, on coming out of this great pressure it appears in relief as perfect as ever: one would not be able to observe, even with a magnifying-glass, the least depression. The metallic plate is then placed in a species of cast metal press, which appears to have moderate pressure; thereon a certain quantity of a transparent and liquid ink is poured; by means of an arm, the cover known technically as the tympan is pressed down; the tympan is raised, and from under the metal plate is taken an image which presents all the characteristics of the most successful photograph, the ink being more or less amassed in the hollows of the plate according to their depth, and that which is superfluous running by itself out along the edge of the tympan. This simple operation entirely disconcerts all the received ideas of a typographic printer, and in my position of an old printer I have experienced something of the surprise which, according to Rabelais, Panurge felt when Frère Fredon gave him a discourse composed of monosyllables. Behold, then, light being omitted from the operation of photographic printing: it becomes equally possible and easy during the night as well as the day. The salts of silver and gold and other difficult chemical products are henceforth abandoned. Thanks to the revolving table turning itself, the drawing of prints succeed each other rapidly, and it does not require more than thirty or forty seconds to produce each one.

"To sum up. This industry has the power of creating photographic images by regular and always perfect means, of a stability equal to the stability of a copper-plate print Pictures will not have to wait to become popular, thanks to the cheapness now possible.

"Mercier had reason for writing in his 'Table de Paris,' that 'for the most part the discoveries of the human kind resembled Æsop replying to those who questioned him of his route, that he did not know where he should go.' Did Niepce and Daguerre ever dare to hope that their idea would make so rapid a progress, and arrive at this triple result, perfection, stability, and popularity of the work for which they dreamt of controlling the light?"

PERMANGANATE OF POTASH FOR CORRECTING THE BATH.

Mr. J. J. Burk, in the *Philadelphia Photographer*, gives a clear and satisfactory statement of his successful use of permanganate of potash for rectifying a bath. He says:—

Though the following may not be new to you, still I think there are hundreds of your readers that would be thankful even for the little it communicates.

I had a pint, or thereabouts, of a solution that no one knew the age of; pinholes and fog were the result obtained on a plate sensitized in it. There was just silver enough to make sixteen ounces of a 35-grain solution, and I worked with it for several days, making an occasional negative and a good many small gems. All at once I found my new bath fogging. I tested it with blue litmus paper, and, as there was no apparent acid action, concluded it to be about neutral. This, I suppose, was brought about by using negative glass cleaned with bichromate of potash, and, such being the case, I thought I might mix the two baths, and thus get a larger quantity of solution. I filtered the two together at night, after which they looked so beautifully clear that I congratulated myself for setting at naught all I had been told concerning such operations. Being much pleased, as soon as there was light enough next morning to warrant the operation, I dipped a plate, hung my hat on a head-rest, exposed and developed; but "nary" hat could I see—nothing but fog. What was I to do? Saturday, the best day in the week for work, and nothing to work with! Now I knew that a few drops of the following would clear a very dirty positive bath: then why not a negative bath?

Permanganate of potash... ...	15 grains
Pure water...	4 ounces.

I poured into my bath about a tea-spoonful of the above. In one minute it had the appearance of very dirty ink. I filtered it, after which it looked very yellow, and I was feeling about as it looked; I dropped in a little more of the permanganate and set it in the sun for ten minutes. It then assumed a clear, bright, pink appearance; I filtered again, and again set the solution in the sun. In fifteen minutes the excess of permanganate had precipitated in the shape of a black, gummy-looking matter. Just as it was filtered a person came in in a great hurry for an ambrotype. I was all excitement. I coated a plate and placed my subject, exposed, developed, and the nicest chemical effect I had ever seen was the result.

I have worked that bath for six weeks with all sorts of collodions, and only once has it given a foggy picture; then a few drops of the permanganate set it right. Sometimes a change of collodion will give a foggy picture; in that case permanganate will not help the matter, but a change of developer sometimes will; if not, go back to the old collodion, and you will get the same clean picture you had before the change.

I do not pretend to say that the above is all new to you, or, in fact, any of it; but I do say that where you find one operator who knows the use of permanganate, you will find one hundred who do not.

OUR PRINTING PROCESSES IN THE FUTURE.

BY H. BADEN PRITCHARD.

When we examine the more recent specimens of Woodburytype, and the newest results of the Albert process, we cannot but regard the perfection of photographic printing as being within our grasp. Manipulations such as are involved in new processes of this kind are, at first, necessarily awkward and difficult of fulfilment, and impediments in the way of complete success must therefore constantly arise; but a well organized system once established, and operators well practised in their work being secured, the process is thenceforth conducted in a uniform and satisfactory manner. That the Woodburytype is of real worth, and capable of utilization in any branch of photographic printing, is a matter beyond all doubt to those who have had an opportunity of inspecting the beautiful Italian picture of a girl seated in an open window, published a short time since by the Photo-Relief Company. Here we have a female head of the most delicate description depicted in all its original softness and modelling, without even a suspicion of that sharpness and rigidity of outline which sometimes characterized the earlier portrait-pictures produced by the Woodburytype. The drapery, too, is likewise faultless, while the high lights, instead of being glaring and chalky, possess the soft, burnished appearance of an ivory surface. This picture alone amply proves the suitability of the process to photographic portraiture; while, as regards its application to the reproduction of paintings, engravings, and less delicate photographic subjects, no doubt at all has ever existed on the matter.

The Albert pictures, again, are certainly very perfect productions. The first specimens shown were indeed wanting in vigour, especially in the deeper shadows, and had, therefore, a somewhat flat, monotonous appearance, similar to that exhibited by a silver print from a soft, over-exposed negative. This defect, we at first thought, would be a very serious, if not an insurmountable one, from the fact of the prints being produced by a method similar to lithography. The failing was, however, merely due to imperfect manipulation, and by no means inherent to the process, as is evident from the pictures now furnished by M. Albert, which do not betray any of the former imperfections. They have less the appearance of being photographs than the Woodbury pictures, resembling very much soft wood engravings of exquisite finish. Heavy blacks are, it is true, absent from the pictures; but these would, of course, be out of place in a delicate sketchy engraving such as the results of M. Albert are designed to represent.

Here, then, are two printing processes perfect in almost every detail, and requiring only a little more elaboration and practice to render them adaptable to any description of work.

The qualities of both processes have indeed already been severely tested; for the Woodburytype is being worked to a considerable extent by MM. Goupil and Co., of Paris, as likewise by the Photo-Relief Company in London, and is also to be extended to Italy and America, if not already in operation in those countries. The Albert process has been carried on for some time at Munich, where its inventor has just erected two spacious establishments expressly for its accommodation; while in Austria—where, bye-the-bye, the photographers wished to secure the process entirely to themselves, and made overtures to M. Albert with that view—the Royal Photographer of Vienna, M. Angerer, has effected a partnership for the purpose of carrying on printing in that town.

In regard to both these processes, it has been stated that prints may be produced by them from any ordinary negative quite equal to silver impressions. This, however, we are apt to doubt. In the same way as in carbon printing a more vigorous print is generally produced than would be derived from the same negative if printed in silver, so we should imagine that certain kinds of *clichés* are better adapted to the Woodbury and Albert processes than others.

In saying this, we do not mean to point to defects in the processes, but, on the contrary, to express our belief that if suitable negatives were invariably used, the results would always be perfect. We are now accustomed to taking negatives solely with a view to printing them with silver, and we manipulate them accordingly in such a manner as to produce the best effects with our printing medium. Our *modus operandi* could, however, be modified at any time if we knew that certain alterations in the quality of the negatives were necessary.

For the future, therefore, we have before us two mechanical printing processes, besides the modest but very efficient carbon process: and likewise the old method of silver printing. In regard to these four methods there arises this question, are we to choose one and discard the others, or is it probable that we shall employ them all, according to circumstances? The latter view appears to us the most likely; for, on due consideration, it would seem impossible for us to give up the silver and carbon processes entirely. These, or methods analogous to them, will always remain in vogue in certain cases where but few prints only are required to be produced in the most simple and inexpensive manner. With amateurs, for instance, or for scientific and technical purposes, where results require to be printed on the spot, a complicated process requiring special knowledge in its manipulation would be out of place; in ordinary photographic portraiture, also, where but a dozen or so of copies are necessary, it would likewise be more advantageous to adhere to the methods of carbon and silver printing. Where, however, hundreds and thousands of impressions require to be produced, there a mechanical process must be employed; and in this case it will be a combat between the English and German methods. At the same time, from what we have seen of the results of the two processes, we should not be surprised if employment be found for both, by reason of the marked difference existing in the nature of the pictures furnished, rendering each process more suitable for particular purposes. This may, indeed, be mere fancy on our part; but the results at present obtained in the two cases are certainly very dissimilar.

In the event of a mechanical process being extensively employed, the photographer's labours must necessarily be divided, the ordinary operator confining himself merely to the production of the negative, and giving over the same for printing to others occupied solely with that branch of work. An arrangement of this kind would be attended with one great drawback, that of placing the production of prints beyond the control of the taker of the portrait, who generally considers this section of photography one of the most important elements of success. This difficulty, however, would occur only in very rare cases, and could to a great extent be obviated by the submission of a pattern or proof picture; for, when the tone and style of printing were once fixed, no further care would be necessary.—*The Photographic Journal.*

A WORD ON CLEANLINESS.

BY M. CAREY LEA.*

Nothing, it is probable, balks the beginner in photography more frequently than the mishaps that arise from neglect of the precaution of keeping his materials absolutely apart from one another. And even older hands not rarely suffer from the same cause.

It chances that most of the substances which the photographer deals with are colourless, and make colourless solutions. Such are nitrate of silver, hyposulphite of sodium, cyanide of potassium, bicarbonate of sodium, chloride and acetate of sodium, &c. When these bodies are dissolved in water, such solutions cannot be distinguished from clear water. If emptied from vessels, unless great care be taken in washing, some portion may remain, and prove extremely pernicious in connection with the next use to be made of the vessel.

Especially, drops may adhere to the upper part of the vessel, not reached in a careless, half purification, and so a very appreciable quantity of the previous material may be introduced into the next. The following instance shows this in a very striking way:—

Some solution of nitrate of silver was emptied from a vial, and, on a sudden emergency, the vial was to be used to contain some medicine. It was especially directed that the vial should be cleaned by shaking successive portions of water in it. The cleaning was, nevertheless, insufficient, and the patient to whom the medicine was administered was rendered extremely sick. As the medicine itself had no such tendency, and as the patient was at once relieved by swallowing table salt, there could be no doubt that nitrate of silver had been left in the vial, doubtless adhering to the sides above the portion which had been washed.

Where, as in photography, a certain round of technical operations is constantly to be followed, it is a great safeguard to appropriate absolutely certain vessels to a single exclusive use for each, so that the need of cleaning may be reduced to the lowest point, and the danger of doing it insufficiently may be in a great measure got rid of.

A great source of danger lies in using vessels that are not labelled. Colourless solutions in such are always liable to be mistaken for each other or for pure water. In this last way many lamentable accidents have occurred. Even where no personal injury happens, regretable losses may result. I once saw a batch of good prints ruined by being placed in what was supposed to be pure water for washing, but which was in reality contaminated with traces of hypo washing, and turned the prints black.

In cleaning vessels there are two very effectual methods, mechanical and chemical. A mixture of shot and sand with a little water is excellent for cleaning. Bristle brushes, sold under the rather odd name of "sash tools," are very useful, and should be always at hand. In cleaning by chemical means, nothing is comparable with a mixture of bichromate solution and sulphuric acid. In some cases, however, especially where salts of iron are to be removed, binoxalate of potash is excellent. And for removing stains on clothing, especially white, the hypochlorite of sodium, sold under the name of chloride of soda, or "eau de Javelle," is most useful.

Finally, I may remark that the more carefully and observantly that one operates, the more one is led to conclude that time is never lost in careful cleaning, but that, on the contrary, this is the truest and most certain economy.

A FEW WORDS ON DRY PROCESSES.

BY M. CAREY LEA.*

Several years ago I determined to devote a considerable amount of time to the study of dry processes, in order, if possible, to obtain one which should work to my entire satisfaction. After much consideration I selected the collodio-bromide process as the base of my experiments, and occupied many months in testing it with all the preservatives (sensitizers more correctly) that seemed to promise favourable results. Some of the results which I then obtained, and which have never been published, acquire just now a certain amount of interest, as will presently appear.

At the time that I commenced these trials no one, I believe, had worked with the collodio-bromide process except its discoverers, Messrs. Sayce and Bolton, and Mr. Mawdsley, and I am glad to think that the results I published aided in bringing this invaluable mode of photography into general notice. Up to that time no "preservative" had been used with the collodio-bromide except tannin. Amongst the very large number of substances which I tried, several gave interesting results besides those which I have described in what I have already published on the subject.

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* *Philadelphia Photographer.*

* Condensed from the *Philadelphia Photographer.*

Amongst others, I got very curious results by using coffee as a preservative, and combining it with carbonate of soda. My first trials with this mixture were so remarkably satisfactory that I anticipated great success for it. Coffee without carbonate of soda was neither very sensitive nor very bright; but when the alkali was added in the proportion of two or three grains to the ounce, the sensitiveness was greatly enhanced, and a bright, clean picture was got. Further trials, however, did not confirm these favourable indications. The plates were irregular—that is, they varied in sensitiveness and clearness without any evident reason. Probably I should have tried to work out the cause of irregularity had I not, in the meantime, got better results with other materials.

These experiments have been recalled to my mind by the details of a process lately published by an English photographer (Mr. Sutton), in which he appears to think that no one before has made dry plates with an alkaline preservative. So much was claimed by the inventor for this process in advance of its publication, and so much originality for the idea of alkalinity in the plates as a condition of sensitiveness, that it becomes worth while to consider the subject a little further. * * * The collodion contains bromides only, and is sensitized in an eighty-grain bath of nitrate of silver. The plate is then washed, and coated with a solution of three grains of gelatine and three grains of carbonate of soda. It is affirmed, at the same time, that all the materials must be of a particular quality, only to be had of Mr. Sutton's agents. This is certainly not an attractive feature in the process.

In describing it, Mr. Sutton lays great stress upon the supposed discovery that plates treated with an alkaline preservative will yield good results, affirming that "we" have all been working in the wrong direction, &c. It must, therefore, be stated, in the most positive manner, that there is no novelty whatever in the use of an alkaline preservative. As I did not publish my own experiment in this direction for the reasons already stated, they, of course, would not suffice to establish the point. They are not needed, however, for, about the same time, a process was published in Germany, according to which plates prepared in a nitrate bath and washed were coated with a solution of tannin to which carbonate of soda had been added.

Whilst the two alkaline preservatives here cited emphatically settle the question of priority, it is, nevertheless, interesting to remark how large a proportion of the substances used for coating dry plates are acid in their reactions. Thus, albumen reddens litmus paper, and forms combinations with bases amongst them with oxide of silver. Tannin also unites with bases. Many syrups of fruits have been tried: these mostly contain malic acid. Gallic acid is another instance. From one remark of Mr. Sutton's it would seem that he believed that up to the time of his publication even neutral preservatives had not been tried; but it is easy to cite several very familiar cases. Glycerine and honey, used often together, are both perfectly neutral. Gum is a compound of gummic acid and lime, and is a neutral body. Neutral salts of morphia are effective as preservatives.

It is, therefore, clear that for years past preservatives have been used of acid, neutral, and alkaline characters, and that no claim such as that here referred to can be entertained for a moment.

PHOTOGRAPHY AS AN ART.*

It has been a matter of controversy, not only in Europe, but in this country, as to the relative merits of photography as an art, some taking the ground that photography should not be classed as or rank among the fine arts, while others argue to the contrary. Having associated with photographers more or less since the discovery of the art, and having had ample means of witnessing its development and progress, I have no hesitation in becoming the champion of photography; and in defence of that class of useful and persevering members of society allow me to say a few words. My own convictions are, that this comparatively new art has done more towards the cultivation of the taste for painting, sculpture, drawing, and what are known as the *fine* arts, than any of the modern discoveries. * *

The ancients divided the arts into the *liberal* arts, which were seven in number, viz., grammar, logic, rhetoric, music, arithmetic, geometry, and astronomy; and the *servile* arts, which were practised by slaves. The moderns divide the arts into the *fine* arts, as poetry, music, architecture, painting, sculpture, &c.; and the *useful*, or *mechanical* arts. Now under which of these shall we class photography? We have already contended that it should be ranked among the fine arts, and we also admit that it partakes largely of the mechanical or useful arts. As an aid to painting, photography has proved itself to be almost invaluable, a fact which many painters readily acknowledge, while others, who are more dependent upon it as a means of correcting their drawings, almost ignore its usefulness as an ally.

The declaration that all photographers are artists would be as absurd as to say that every one who brushes oil colours on to canvas is an artist. Many photographers display real art, and produce really artistic results, both in the posing and lighting of their subjects, and in the arrangement of drapery and other accessories. To illustrate the feeling which has always, more or less, existed among different *kinds* of artists, I cannot do better than relate an anecdote (which may be new to some of your readers) which once occurred at a dinner in London, the guests of which were exclusively artists, painters, and authors. After dinner a toast was proposed by one of the latter, as follows: "Gentleman, I rise to propose the health of the painters—and *glaziers*." After the laugh at the expense of the painters had subsided, one of their own number arose, and proposed,—the health of the *paper-stainers*.

Many of the leading photographers of this country have been abroad, and visited the principal art galleries of Europe—have studied the principles of art, and returned to put their knowledge into practice. Our leading photographers are men of brains and cultivation, and should take rank with artists. In fact, many of these were painters, sculptors, or engravers, before they commenced the practice of photography. I know of some photographers who are now in Rome, studying the art of painting, whose first ideas of art were developed by the study of photography.

Are these more, or less, artists because they studied photography first? By no means. The impression is very prevalent, that all photograph portraits must necessarily be good likenesses. But let us look at two portraits of the same person by different photographers, and we would hardly suppose them to be the same individual. The one is a fine and really artistic portrait, showing a careful study of the face and position, while the other, in point of mechanical execution, may be equally good, but entirely devoid of artistic merit. Look over your friend's photograph album, and you will not find there more than one picture out of twenty possessing any merit aside from its resemblance to some person, and among photographers, not more than one in twenty can lay any claim to artistic merit.

Among painters, sculptors, musicians, and other artists, the proportion of those who arrive at distinction is very small; and here I would say to all photographers, aim at high artistic merit in your profession; study to be artists, not only in name, but endeavour to make *your art* one that shall be worthy a place among the *fine* arts. Every sculptor cannot be a Powers, nor every portrait painter an Elliott, nor every marine painter a De Haas, nor every landscape painter a Bierstadt. But none of these artists have progressed so rapidly in their art as the photographer has in his, and hence there is every encouragement for the photographer to persevere in his efforts to become a *real artist*.

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* *American Art Journal.*

PHOTOGRAPHY AND TRUTH.

BY DR. H. VOGEL.*

We often hear from admirers of photography that this young art represents the pure truth, the true counterpart of nature.

This sentence is repeated by thousands of thoughtless persons, and has almost become a dogma. We are willing to swear to the correctness of photographic representations, and even the courts of justice have admitted them as evidence.

But is the correctness of photographic representations really absolute? I venture to say, No, even at the risk of being called a heretic. Photography applied at the right place and in the right manner will furnish representations more correct than any other art, but absolutely true they are not, and because they are not absolutely true it becomes important to trace the sources of error, and of these there are many.

I will begin with optical error.

A picture which has been taken with a lens that does not draw correctly, and where the lines that should be straight at the corners appear to be curved, can certainly not be called a correct one. Many persons may not notice the incorrectness, nevertheless it exists. Some will say that a correctly drawing lens will avoid these errors. True, very true; but let us examine the pictures of high buildings which have been taken with a correct drawing lens from a low stand-point. The lines which should be vertical will converge toward the top. Can this be called correct? But, you will say, the reason of this is that the camera was not placed level. Very good; but let us now try a Globe or a Pantoscopic lens, and take the view of a long street. How the perspective deepens—how enormously large the nearer houses appear; and how very small are the objects in the distance. Houses that are distant a hundred paces look as if they were half a mile away. Is this truth? No, certainly not. And yet the lens draws correctly, and the camera has been placed exactly on a level, and the perspective is mathematically correct; a draughtsman could not make it any better.

But where lies the mistake? The angle of vision is too large. Unfortunately, this cannot always be avoided, and, curiously enough, it affects straight lines as well as curved ones. Take, for instance, a pile of cannon balls: an artist will represent them as circles. Now take a picture of them with a wide angle lens, in such a manner that they will appear at the edge of the picture, and, instead of circles, we will have ellipses. This is, mathematically, easily explained: every ball will send a conus of rays on the optical centre of the lens, and this conus will be cut by the plane of the picture as an ellipse when it falls in any other direction but at right angles.

A photographer showed me the view of a castle which had been taken with a Pantoscopic lens. In front of the castle was a row of statues, and it was really comical to notice how the faces and the bellies grew wider and broader towards the edge of the picture, and the slender Apollo de Belvidere, who unfortunately happened to be at the extreme edge of the plate, had such a broad face and a belly of so large a circumference that he looked like Dr. Luther. Again, is this truth?

And, unfortunately, these are not the only sources of error; there are a great many more.

In your number for June, 1865, you published four heads, portraits of the same person. They were intended as studies of lighting by Loescher and Petsch, front light, top light, side light, and oblique light. In the first picture the man was dull and stupid looking, the second gave him an angry and savage expression, the third gave him a cunning look. Which of the three was correct? I say, not one of them. The truest representation was No. 4, where a combination of light effects had been employed; and we see that the mode of lighting can become a source of error. And this does not only hold good for portraits, but refers to landscapes also. The view from the Rochersberg, at Bingen on the Rhine, had often been described to me as most beautiful. I visited the spot, in the company of friends, several times, and we could not see any beauty in the view. At last I visited the spot again, but not, as before, in the morning, but in the evening, and then the view was charming. But, aside from the direction of the light as a source of error, there is another circumstance which has much influence on the correctness of photographic representations. Generally speaking, the lights are too white and the shadows are too black in photographic representations. This is a radical error, which has its origin in the nature of the art, and the avoidance of which is sometimes very difficult. The error is most striking in taking the picture of an object on which the sun shines with full force. If we expose for a short time only, we get the details of the light parts, but the shadow is a black spot without any detail whatever. If we expose for a long time we will get some detail in the shadows, but the lights will be over-exposed to such an extent that all the details will be wanting. Can you call this correct?

This is the reason why we have so much difficulty in our studios when we wish to produce a properly lighted picture. We keep the lights more diffused and the shadows lighter than what a painter would do, and the latter are often utterly surprised when they see a model in the gallery under such an artistically faulty illumination, and see the resulting picture afterwards correct in lights and shadows.

In taking landscapes, architectural objects, and particularly interiors, we cannot control the light with the same ease as in portraiture. I took once the photograph of a chemical laboratory. The room was large, with an arched ceiling. In the picture you would see the tables, furnaces, retorts, lamps, &c., everything perfectly plain, except the arched ceiling; it was too dark. I made other attempts with twenty, thirty, and forty minutes' exposure; at last I saw a trace of the ceiling, but now the objects near the windows were so much over-exposed that all the detail was lost. The result was four pictures, not one of which was true. Finally, I reflected sunlight on to the ceiling.

But this circumstance of the light parts being too light and the shadows too dark in photography makes itself felt sometimes in very simple operations; for instance, in reproductions of prints. One of our photographers was called upon for a reproduction of "Kaulbach's Battle of the Huns." The copy was an excellent one, but the background was too dark, too black, not hazy enough. The customer refused the copy, and demanded another picture. A second copy was made with longer exposure. Then the background had the hazy appearance of the original, but the figures in the front, which should be bold and black, had a dusky grey look. Finally, a good result was obtained by retouching the negative. But can this be called truth?

I have purposely selected simple examples to substantiate my assertion that it is difficult to make truthful photographs. We now have to consider another point, the worst of all, and that is colour.

In photography the cold tones will be rendered too light, while the warm ones, such as red and yellow, will be reproduced too dark. As an illustration, I may mention the photographs of Hildebrand's painting, "Sunset on the Ganges"—a glowing red sun with burning clouds of chrome-yellow on an ultra-marine blue sky. And now, what does the photograph show? A black disc surrounded by black thunder clouds. The sun looks like the solar eclipse at Aden.

I might multiply examples, but what I have said will be sufficient to enlighten those who pretend that a photographic representation must, under all circumstances, be a correct one. Fortunately for the art, nearly all the sources of error can be avoided by the enlargement of suitable lenses, a proper position of the camera, proper illumination, the employment of original and negative retouching. It constitutes the art of photography to present the reality true and beautiful.

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* *Philadelphia Photographer.*

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MODIFIED RESIN PROCESS.

BY H. F. RADBRUCH.*

I send you the dry collodion process used by me for over one and a-half years with the best success:—

Collodion.

Plain collodion	1 ounce
Equal parts of alcohol and ether	
Iodide of sodium...	4 grains
Bromide of cadmium	3 ,,

The salts dissolved in alcohol and added to the collodion.

Second.

Ether	1 ounce
Gum resin...	½ ,,

Dissolve, and add half an ounce of balsam of copaiba. Shake well, and put it aside to clear up, which will take about two or three days. To the ounce of collodion add five drops of No. 2; shake well, and let it stand for about three days. The collodion will then be ready for use.

Silver Bath.

Nitrate of silver...	1 ounce
Distilled water	11 ounces
Nitric acid	3 drops

Developer.

Sulphate of iron...	1½ ounces
Epsom salts	1½ ,,
Water	32 ,,
Acetic acid	1½ ,,
Alcohol	1 ,,

The negative plates have to be albuminized with about one ounce of albumen to seven ounces of water, else the film will peel off. After the plate has been sensitized, wash it well with the purest water that can be obtained, and put it away to dry. When dry, the plate is ready for use. Expose not longer than wet plates.

I took my negatives with the front lens of a half-size C. C. Harrison's instrument, with a diaphragm of three-eight-inch diameter, and exposed from ten to twenty-five seconds. With wet plates it took the same time.

Before developing, wet the plate with distilled water, and pour over it a solution of—

Water	1 ounce
Nitrate of silver	20 grains
Acetic acid...	10 drops

Then develop in the usual way. If the exposure is long enough, the image will appear almost immediately, looking very intense. If the shadows do not appear dense enough, wash the plate, and redevelop in the same way as before. Fix with a weak solution of cyanide, and examine the negative in the light. It will keep the same intensity when dry and varnished as it then has. If not intense enough, wash it very clean, and redevelop in the same way as before.

This way of redeveloping I prefer to any other, because it gives the softest picture, especially in the dry process.

By mail I send you some pictures taken with this process, which is the simplest, as well as the easiest, that can be had.

Inclosed you will find photographs of the eclipse as seen here, taken with the Steinheil aplanatic lens, and on dry plates.

Hoping that every photographer will give this process a fair trial, and succeed as well as I did, I close these lines with the remark that one drop of No. 1 added to one ounce of any collodion keeps the collodion for a year and longer in good working order.

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VARIED TONES, AND HOW TO GET THEM.

BY J. H. HALLENBECK.*

Having had a number of enquiries in relation to the different tones produced by the several chlorides, I send the following, hoping it may be found very valuable to workers on plain paper, also to those albuminizers who are not posted. And here allow me to remark, that it would be greatly to the advantage of those who albuminize paper for the trade if they would stamp, or, in some manner, state how their paper is salted. By so doing, it would do away with the great number of complicated toning baths which the toner now has to get up for producing the particular tones wished. The following list of the salts which will give the best effects (selected from a large number of combinations), will show the variety of tones produced (Prof. Hunt is entitled to the credit of first making these experiments):—Muriate of ammonia, red changing to black; chloride of sodium, red changing to black; muriate of strontia, a fine brown; muriate of baryta, a rich brown inclining to purple; solution of chloride of lime, very red; solution of chloride of soda, brick red; iodide of potassium, yellowish brown; chlorate of potash, variable, sometimes yellowish and often a steel blue; phosphate of soda, mouse colour; tartrate of soda, dark brown; urate of soda, yellowish brown; muriate of iron, deep brown which blackens; bromide of sodium, red brown of a rich tint. The muriate of ammonia is the most sensitive, and bromide of sodium the least.

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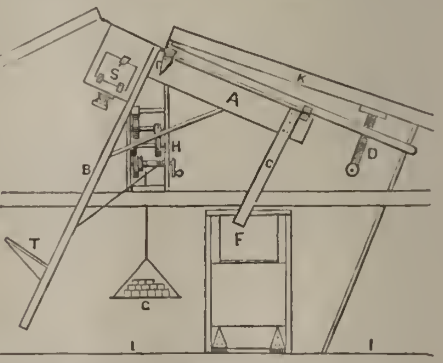
SOLAR CAMERA WITHOUT REFLECTOR.

BY A. E. TURNBULL.*

I enclose a rough drawing and description of a solar camera which I have just finished making, and am so well pleased with its operation that I have concluded to send you a description of it. I use it in the loft of the building. The building stands east and west, and has a shingle roof sloping to the north and south also. Just under the cone of the roof, on the south side, I cut out a hole large enough, through which the camera points toward the sun. In the drawing, A B is the frame of the camera hinged to a piece of wood, E, by the hinges as shown. The piece E is hinged to the roof at the upper end, and regulated by the screw, D. Now, it is evident that when the camera is set by the screw, D, so as to point to the sun, it needs only one motion, and that sideways; and, the angle being right, it will follow the sun's path. Thus, I need but one motion. Now, then,



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* Philadelphia Photographer.

* Philadelphia Photographer.

I made a large clock of wood, H, which, when the camera is on the sun, keeps it there, and needs no attention until the picture is done. S is the camera-box with the lens, negative, and tube. T is the screen on which the paper is placed. Around the top of the box and against the roof I tacked several thicknesses of cloth, which allows the camera motion, but keeps out the light. F is a box attached to the top of a frame hinged to the floor, and then connected by a lever to the piece C. This box, filled with bricks, balances the camera so that it will set any place that it is wanted. The room is kept dark, so the camera needs no box to keep the light from the paper. G is the clock-weight, H the rafter, and I I the floor. The whole works perfectly, and the steady motion given to it by the clock-work produces prints much superior to the old way, and I can attend to other work while it is printing.

If you find this worthy, you are at liberty to give a decription for the benefit of the fraternity.

Correspondence.

PHOTOGRAPHING SEA-GULLS ON THE WING.

Dear Sir,—What a deal has been written about the "Gulls"! If I had the job to do I should just get as many dead gulls as would make up the number I wanted, skin them, stuff them, and fix them in position. Surely, after this, they would remain sufficiently still to be photographed!—I am, sir,

A Stuffed Gull.

[The plan proposed by our correspondent is most creditable to his industry. When he has collected fifty gulls and photographed them, we hope he will favour us with a print. But, when this is done, there will remain another point to be solved, which is, indeed, the one which has been chiefly puzzling our correspondents: by what method will he print his landscape negative and his gull negative together, so as to secure perfect register and harmony, and, at the same time, do it sufficiently rapidly for commercial publication? This is a point which will tax ingenuity as well as industry; but probably our correspondent will overcome the difficulty. We shall hope for a print and details.—Ed.]

SEA-GULLS.

Dear Sir,—Having just seen one of the above photographs, and as everybody seems to be making guesses as to how it has been produced, may I add mine to the many?

Have the birds been dead (*i.e.*, stuffed)? If so, of course no head-rest would be required.—Yours respectfully,

Liverpool, *October* 12*th*, 1869. A Young Photo.

[We are unable to state what was the actual method employed in producing the photograph in question. See our note above to a similar suggestion from a correspondent.—Ed.]

Talk in the Studio.

Exhibition in the Netherlands.—We are glad to note in the list of awards in connection with this Exhibition that we find the name of Mr. Solomon, who received a silver medal for "optical instruments."

Devonport Fine Art Exhibition.—We have pleasure in recording that Mr. Brookes, whose prize prints in the Royal Cornwall Polytechnic Exhibition we noticed last week, has just received the only award for photographs at the Devonport Fine Art Exhibition, consisting of a first-class bronze medal, the award being for half-a-dozen prints similar to those we noticed. We hope shortly to publish a statement of Mr. Brookes' operations in producing his charming landscapes.

Disadvantages of Ammonia in Developing.—Referring to the use of ammonia in alkaline development, Mr. Carey Lea, in the *Philadelphia Photographer*, says, "that besides its unpleasantness, the inhalation of an atmosphere so charged, for a considerable time together and frequently repeated, must interfere with the proper ventilation of the blood, the corpuscules of which ammonia is known to have a tendency to paralyze; and he adds that it is certain that, in working with ammonia developers, there should always be a good ventilation of the room, and the developing liquid should not be left standing about, either before or after it has performed its functions."

Curious Developer.—Mr. H. T. Anthony, in the *Philadelphia Photographer*, recommends the following as an excellent developer, which may have been forgotten by many. He says:—"To one ounce of a warm ten-grain solution of gelatine add three drops of a fifteen-grain solution of tannin; shake well until re-dissolved, when add one drop of ordinary iron developer, and it is ready for use. To keep the gelatine, add a few drops of formic acid." There is surely an error here. Instead of one drop of ordinary iron developer, it should be, we imagine, one pint.

Practical Silver Saving.—Mr. J. C. Browne gives, in the *Philadelphia Photographer*, a novel but excellent hint for silver saving. He says:—"Almost every photographer has some special way of his own for saving silver from the developing solution, but I doubt if a more primitive or effectual plan has ever been hit upon than one adopted by a photographer, of no mean reputation, that I met during my travels this summer. The whole apparatus was nothing more than an old felt hat without holes, arranged upon a frame of four sticks over the developing tray, similar to a funnel. Plates were developed into the hat, which, from the porous condition of the felt, allowed all the solution to filter slowly through, but not before all of the silver had been precipitated by the continued action of the iron. After a season's work the hat was burned and the silver recovered. Simple as well as effective appliances are what photographers desire, and this certainly deserves a trial, even at the sacrifice of an old felt hat."

Solar Camera Photographs.—The fine-art critic of the *Standard* says:—"Mr. Mayall, who many years ago commenced the construction of a solar camera for the faultless production of enlarged photographs, has continued his improvements of it, and has brought it to a degree of perfection which may warrant further notice. Several examples of life-size photographs thus produced have been submitted to us, very remarkable for their decided and emphatic character. One in particular, of his Royal Highness the Prince of Wales, is characterised by great fidelity and force. No attempt is made by Mr. Mayall to realize the charms of indecision, which Mrs. Cameron has succeeded in producing, imparting to her photographs the look of fine mezzotinto engravings after Sir Joshua; but if Mr. Mayall has not been captivated by the charms of chiarescuro, he has made some very great improvements in the quality of simple light and shade. He has acquired the valuable and desirable art of rendering his half-tones and deep decisive shadows in keeping. The modelling of his faces is not wanting in many little niceties of harmony. Large in size as they are, they are not mere patches of black and white, but calm and faithful examples of portraiture, such as any one might be content with who might be desirous of preserving in an impressive form the features of his friend. Their merits consist chiefly of certain broad and powerful touches—determined strokes, so to speak—grasping the whole similitude together, imparting a oneness to it which is evidence of mastery no less in photography than in painting. These examples which we have inspected are all enlarged from small carte-de-visite negatives, and by the direct method of printing. They are entirely untouched, and are just as the camera leaves them. The photographic lens with which they are produced is a four-inch Dallmeyer with a movable back lens, which distributes the light over the whole surface equally; hence there are no sharp planes of definition, nor any distorted lines. The entire figure can be produced with equal facility. Mr. Mayall has executed a full-length, a little above the life-size, of Mr. Peabody, which has since been painted in oil for his native place, Danvers, Massachusetts. Another example is in the institution of Baltimore, and one in the gallery of the late Prince Consort measuring nine feet. Mr. Mayall has just executed a full-length of the Hon. Reverdy Johnson, intended to be presented to the Town Hall of Brighton. Mr. Mayall has nearly completed arrangements for introducing the carbon process, by which he will be able to print his portraits from glass plates with common printer's ink, tinted to the exact shade required, and thus do away with silver printing altogether."

THE ADVANCEMENT OF PHOTOGRAPHY BY SOCIETIES AND JOURNALS.—The knowledge imparted to a society is public property, and is scattered broadcast through all civilized countries through the instrumentality of the journals. A new process laid before the *Photographische Gesellschaft* in Vienna is published in the *Correspondenz*, copied into the *Mittheilungen* and the *Photographisches Archiv*, crosses the channel, appears in translation in the PHOTOGRAPHIC NEWS and the *Journal of Photography*, puts on a French garb in the *Moniteur de la Photographie* and the *Bulletin Belge*, appears in Italian robes in the *Camera Oscura*, is read in the *Navorscher* in Holland, in pure Russian at St. Petersburg, and over the wide domains of the Russian Empire; rushes across the Atlantic, and is spicily done up in the *Philadelphia Photographer*, and distributed for perusal from New York to San Francisco, and from Montreal to Browusville; is carried across the Pacific, and reappears in Anglo-Saxon robes in Melbourne, where it is distributed over the fifth subdivision of the globe, and is finally found in the East Indies amongst the amateurs of the British army. In six months after the presentation of a new process before the photographic societies of London, Philadelphia, Paris, Berlin, or Marseilles, the entire globe of the earth is acquainted with it. This process is public property; and each photographer or amateur that reads his own language learns to practise the process, and thereby to increase the weight of his purse or the size of his artistic collection.—*Professor Towler.*

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To Correspondents.

G. C. (Wortley).—Marine glue is the simplest and most efficient waterproof cement we know, and it will unite pieces of leather perfectly.

G. S.—We have seen the magnesium light used for enlarging with very complete success. Using an ordinary enlarging process, and enlarging from a card negative to the size of a whole sheet of photographic paper, the exposure required was about three minutes; with a rapid process an enlargement was produced in less than a minute. You will find details in the PHOTOGRAPHIC NEWS, January 24th, 1868. 2. Preserving the purity of the whites in developed prints depends on many things. Primarily, as you are aware, the sensitive paper requires as careful preservation from light as a sensitive collodion film. But, besides this, many precautions are necessary. Discolouration in the whites of a developed print is equivalent to fogging in a negative, and the same causes which will produce the one will generally bring about the other. The use of a trace of citric acid in the salting solution is often useful; short floating on the silver solution is useful; sufficient acid in the developer is useful; especial care to wash well before immersion in the fixing bath is an imperative condition of purity. These points and general care in manipulation are important.

EXCELSIOR.—There is no manual devoted solely to the subject of lighting the sitter, nor to the general subject of artistic posing and arrangement. The best and fullest information on the subject is to be found in Mr. Robinson's book, just out, on "Pictorial Effect in Photography." Study with an earnest desire to learn will effect much in acquiring skill in this respect.

C. A. R.—As a rule, success in transferring depends on two things: the use of a suitable collodion—which means a tough, horny collodion of good body—and clean glasses. After that, much depends on personal skill in manipulation, and attention to little niceties. If the stripping of the print from the glass take place after drying, it is important to allow the film to dry spontaneously, and not by means of heat. When the enamelled paper such as that you send an example of is used, transferring wet is often employed; and there should be no difficulty in that if the collodion be suitable. If the film be powdery and does not readily leave the glass, apply a five-grain solution of gelatine to every ounce of which from five to ten drops of nitric acid have been added. This gives the film toughness, and also loosens it from the glass. As the cases of difficulty spring from different causes, we can only give you general hints; but the application of these hints will, doubtless, remove your troubles.

F. DOWNER.—We shall have pleasure in duly proposing you.

W. A. M.—The preliminary coating of albumen, gelatine, and bichromate, which receives a long exposure, is intended by Herr Albert to prevent the second film of bichromated gelatine from tearing up and leaving the plate. Have you adopted the precaution of applying this preliminary coating? Your example is encouraging; but there is, of course, yet much to achieve.

C. S. (Norwood).—Glass may be rendered adiactinic, without destroying its transparency, by means of a suitable yellow varnish. A varnish which answers well is made as follows: obtain equal parts of raw sienna and orange chrome No. 3 as they are prepared for use in oil painting by artist's colourmen; mix these, and dilute them to the proper consistency with turpentine and japanner's gold size, adding a little patent driers. Glass painted with this mixture will permit a flood of illuminating light to pass, but will intercept actinic light.

W. WELLER.—The print you enclose shows slight signs of imperfect fixation in the shape of minute yellowish brown spots; otherwise it is pretty good. 2. It is impossible to say with accuracy how many prints of a given size can be fixed in a pint of hypo solution, because the question is affected by so many conditions the presence of which it would be difficult to determine. Of course, it must much depend on the amount of silver salts in the paper, and this will depend on the strength salting solution used in preparing the paper, on the strength of the nitrate bath, on the time of floating, and the power of absorption possessed by the paper. The amount of hypo necessary for fixation will also depend much on the nature of the prints, whether vignettes or otherwise, vignettes requiring more hyposulphite to fix them than printed-out copies. In general terms, we may state, however, that with ordinary commercial papers, the prints in about six sheets of paper may be safely fixed in four ounces of hypo in a pint of water. 3. They should be left in the solution fifteen or twenty minutes, and kept in motion during their immersion. There is no certain method of ascertaining that a print is perfectly fixed by looking at it. After perfect fixation the print, as a rule, looks somewhat more transparent than before.

B. WYLES.—You are quite right in supposing that, with the red tiles so near your side-light, roughed glass will give you more white light than would otherwise be obtained, the multitude of small reflecting surfaces receiving the vertical and nearly vertical light, and throwing much of it into the studio. Theoretically, using ground glass, with the ground side outwards, would doubtless be the best means of securing this result; practically, we have been assured that treating the *inside* of the glass with the preparation of oxide of zinc and mastic varnish served well to produce a similar result in case of a studio somewhat similarly placed. With the exception of three or four feet at the background end, we think we should make the rest of the side all of glass, and the roof partly of clear and partly roughed glass, as in your diagram. In fact, we think your proposed plan will make the best of somewhat trying circumstances, and will probably give you very good lighting. We shall be glad to receive the report.

W. G. SMITH.—We are glad you like the print. We shall give due notice of the introduction of the process into this country.

ADELAIDE.—The products of combustion from a hydro-carbon lamp are not likely to be injurious in the dark room. 2. A stove or its piping will not be injurious; but in both cases take care to secure ventilation for health's sake. 3. Thinness and blueness of the film may be due to several causes: for instance, the plate remaining too short a time in the bath; the collodion containing too little iodide and bromide, or too little pyroxyline. 4. The plate should be first washed with distilled water, after which it may be well washed in the water you mention without risk. 5. For what kind of colouring do you require the sizing—oil or water colour? For water colour, albuminized paper does not necessarily require sizing, although several modes of sizing will improve it; sponging with ox-gall is useful; a weak gelatine size is sometimes beneficial; nothing is better than Newman's sizing preparation as a preparation for water colours. For oil colours we have used with advantage isinglass dissolved in gin by the aid of gentle heat, or dissolved in hot water, and then an equal part of spirits of wine added. The thickness is chiefly a matter of judgment. The size, when warm, should be about the thickness of cream.

A YOUNG PHOTOGRAPHER.—We cannot tell you yet what are Herr Albert's arrangements for the commercial working of his process in this country, nor his terms for printing. We shall give due announcement of his arrangements for working the matter in this country.

R. SLINGSBY.—Thanks. We will give the question attention, and let you know further shortly.

Several Correspondents in our next.

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Photographs Registered.

Messrs. STARK BROTHERS, Dublin,
Photograph of a View on the Liffey, Dublin (from an old print).
Mr. TAPHOUSE, Barrow-in-Furness,
Two Photographs of the Duke of Devonshire.
Mr. G. HODGSON, Sheffield
Photograph of Abraham Sharman, Esq.

THE PHOTOGRAPHIC NEWS.

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PERMANENT SENSITIVE ALBUMINIZED PAPERS.

The manufacture of permanent sensitive albuminized paper is increasing. Since the introduction of Carrier's paper—the first of the kind in commerce—little more than a twelvemonth ago, we have received intimation and samples of three other manufactures of the same kind. That of Mr. Charles Durand we have noticed more than once; and we may here remark that we recently tested a sample of it which we had had two months in our possession, and which yielded at the end of that time an excellent print.

At the last meeting of the South London Photographic Society, Mr. A. L. Henderson distributed amongst the members some examples of a sensitive albuminized paper intended to keep. Of the character in this respect we cannot, of course, speak at present, but we have tested the printing qualities as compared with freshly sensitized paper. In point of sensitiveness, nothing is lost by the treatment necessary for obtaining keeping qualities. The paper prints rapidly, and assumes a rich warm colour in the printing-frame. In toning, little difficulty is felt, although it is not quite so easy to manage as freshly prepared paper in which free nitrate is present; and the tendency is to preserve some of the shades of brown or purple-brown rather than to acquire a black colour. We tried it with various toning solutions, and obtained the best result with a freshly-prepared bath made by adding a little chalk, so as to form a paste with a concentrated solution of chloride of gold, and then adding the required quantity of water, about four or five ounces to a grain of chloride of gold. This bath may be used as soon as it has lost all yellowness, which will be in a quarter or half an hour, or it may be kept for hours or days. A sulphocyanide and gold bath also gave us excellent results.

We have also tried at the same time a sample of permanent albuminized paper prepared by MM. Sander and Risse, of Norden, which had been in our possession three or four months at the time of trial. On opening the packet we found only the faintest trace of discolouration, and this entirely disappeared in the course of toning and fixing. In printing qualities this also was excellent, printing quickly, assuming a rich colour, and toning much in the same manner as that of Mr. Henderson, to which we have just referred. Even in vignette prints the whites of the finished pictures were as pure as in prints from freshly prepared paper.

The only drawback in all these papers is a little tendency to lack of force in the blacks, unless a very vigorous negative be employed, the prints being characterized by softness and delicacy rather than great richness, especially when thin negatives are used. That this tendency may be overcome is very likely. The papers now under notice and that of Mr. Durand give greater richness than did that of M. Carrier, and a partial improvement in this respect gives hope of more being possible.* With permanent collodio-chloride paper any amount of vigour can be obtained, and we see no reason why it should not be secured in permanent albuminized paper.

We do not attempt here to speculate on the possible modes by which permanency may be secured in sensitive papers, as it is a question scarcely of vital interest to the mass of our readers, who are consumers, not preparers, of albuminized paper. It is essentially a manufacturer's question, for if photographers, whether amateur or professional, can have sensitive paper ready for use supplied to them as good in quality and at as cheap a rate as that they sensitize themselves after purchasing the albuminized paper, few will be concerned to prepare it for themselves. At present the price is somewhat higher, and it may be regarded rather as an amateur's luxury, who, to escape the trouble of sensitizing paper, and having much of it spoiled before he has time to use it, is willing to pay an extra price. Mr. Henderson intends to introduce his into the market on terms which shall "compel photographers to use it." The compulsion will not be difficult if he can give equal excellence at less cost of time and labour. We hope he will succeed.

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ALKALINE PROCESSES.

In an interesting paper, which we print on another page, Mr. Blair raises some important practical issues suggested by the recently proposed alkaline wet and dry processes. The enquiry of primary importance in the case of any proposed change is: What is to be gained by it? The answer here is: A process in which plates can be produced either wet or dry which are more sensitive than plates produced by the wet process now in use. Mr. Blair thinks it is more important to verify the claims made than to consider in what degree the method is due to various authors. If it is found not to be of much value, or not superior to existing processes, it is not, he thinks, worth discussing the origin. This is undoubtedly, to a large extent, true. The community at large are more concerned, in relation to any alleged good thing, to know that it is true than that it is new. The journalist, however, has duties in such matters; and in our first notice of the process, in which we simply announced the claims made, without questioning them, it was our duty to point out, by the way, in justice to contributors to our own pages, the details wherein they had anticipated the author of the process under consideration.

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* Both Mr. Durand and Mr. Henderson assure us that any amount of vigour can be secured, and with a sample of Mr. Durand's paper, tried since the above remarks were in type, we have obtained great vigour.

Mr. Blair asks at the outset: Has the process been carefully and thoroughly tested by other competent parties, and, if so, with what result? To this question we cannot give any satisfactory answer as yet. It is certain that no systematic statements of such tests are yet on record; and it is unfortunate that the author of the process makes it a little hazardous for any one to give publicity to his experiments, favourable or unfavourable. From Mr. Sutton's long experience as an editor, he has learned, it appears, that favourable opinions in journals are only obtained by paying "black mail," and having announced this as his conviction, those who express favourable opinions of his process are liable to the imputation of having received such "black mail," and those who express unfavourable opinions to the imputation of having wanted it. Those who know better will not, of course, be influenced by such considerations, but will honestly state their convictions, smiling at the absurdity of the motives which will probably be attributed to them. Unfortunately, so far as we can learn, very few competent persons have as yet given the subject any attention. As we have before stated, we have met with but two, both of which were from honest—one, certainly, not unfriendly—critics of the author. Both had come to the same conclusions; namely, that the plates were not more sensitive than those produced by the ordinary wet collodion process, and that the image produced was thin, poor, and foggy.

It is only fair here to point out that isolated, or even many, failures do not furnish valid evidence against a process. Scarcely any good process has been proposed in relation to which many failures have not been recorded. The washed plate process, yielding perfect results in the hands of Mr. Hughes and others, has, in several cases, given the experimentalist nothing but fog. The golden syrup process for keeping plates moist, which, in the hands of Mr. Robinson and others, has given magnificently clean negatives, in the hands of some has yielded only stains and mess. The gum-gallic process, which, in the hands of Mr. R. Manners Gordon and some others, is literally perfect as a dry process, has in other hands been full of heartbreaking difficulties. And so we might proceed through the whole range of photographic processes, and show similar results. The occurrence of failures, therefore, in many hands and in first attempts with the proposed alkaline process is not necessarily an argument against it.

Theoretically, the probabilities are in favour of this process. It has been held by many that a latent image is formed by the first impact of light on a sensitive plate, and that, if a developer of sufficient energy could be applied, that image could be brought out. The difficulty has been that where nitrate of silver was present, a powerful developer could not be applied without risk of fog. In this process a plate yielding an image capable of development without nitrate of silver can be treated with a powerful alkaline developer, and we can readily conceive that if the operations are carefully conducted, an image may be produced with short exposure and without fog; but whether greater rapidity could be so gained than that which characterizes the ordinary wet process under its best conditions, still remains to be determined. In working the most closely analogous process —Mr. Bartholomew's alkaline gelatine dry plates—we obtained, with plain, but not alkaline, pyrogallic development, negatives with an exposure a fraction longer than that required for ordinary wet plates. In Mr. Sutton's, plates are prepared with a bromide only, instead of a bromo-iodide; and alkaline development is employed. It is not impossible that by these means greater sensitiveness may be obtained; but, for the present, Mr. Blair's first question as to the certain value of the process remains unanswered.

Mr. Blair's next question is, as to whether it is really necessary that the collodion and bath should be neutral, and whether, even if these were acid, any acid would not be partially removed in washing, and entirely neutralized when an alkaline gelatine solution were applied. These questions can, of course, only be answered by the results of trial. The alkaline wet process which Mr. Blanchard recently described, when he used a neutral collodion in a bath rendered alkaline by means of oxide of silver, and developed with a neutral developer, gave him an excellent and clean image; but when an acid (cadmium) collodion was excited in the same bath it yielded fog. Mr. McLachlan, in detailing his modification some time ago, stated similar experience: if he employed a red and acid collodion in an alkaline bath, he got a bad, foggy negative; but if he neutralized the collodion, and then employed it in the alkaline bath, the results were described as excellent. And, indeed, in the earliest times of the collodion process newly mixed collodion and a neutral bath were regarded as the condition of the highest excellence and rapidity. It was at one time proposed to keep a piece of marble in the nitrate bath to ensure constant neutrality.

Mr. Blair raises another important question. He asks how far, in comparing this proposed alkaline process with the ordinary wet process, care has been taken that the latter should be tried under its best conditions. In many cases we know that comparisons of this kind are most loosely and carelessly made. As we recently stated, one dry-plate experimentalist, on whose dicta we have learnt to place very little reliance, who had made such a comparison, admitted, in reply to a question, that he had not tried the wet process for years. But Mr. Sutton, despite his habit of unscrupulous assertion, has a perfect knowledge of the subject upon which he writes; few men understand most points connected with photography better; and he should know well the value of the wet process in its best conditions as at present known, although, from his love of the old iodized collodion process, and with pyro development, we suspect that he has had little experience with the modern wet process as used in instantaneous work by such men as Mr. Blanchard, Mr. Breese, and others by whom not simply vessels, vehicles, and men and horses in motion have been secured, but the spray of breaking waves has been rendered with perfect crispness of definition.

To the important questions raised by Mr. Blair we have not attempted to supply exhaustive answers; we have merely thrown out a few suggestions concerning them. We shall be glad if our experimental readers will furnish us with details of any trials they may make of this process, and, despite the somewhat unsatisfactory way in which the process was introduced, and the ungracious manner in which discussion of any points in connection with it has been received, we shall be glad to find that the claims made for it are verified. In such case it will not, we apprehend, supersede the ordinary wet process, nor will it prove that all other processes are wrong; but it may, for many purposes, prove a substantial addition to the resources of the art.

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ARE CARBON PRINTS PERMANENT?

This question has often been asked, and we have never felt any hesitation in answering that when properly produced carbon prints are permanent. We print on another page some interesting observations on the subject by Mr. Spiller, who raises the question, and suggests the possibility of a doubt, both in relation to carbon prints and Woodburytypes, on the ground that alum or oxide of chromium is not sufficient to prevent change or decomposition in gelatine, paper makers' size, consisting of gelatine and alum, keeping good only for a short time in hot weather. He suggests that as gelatine which has been converted into leather by the action of tannin is not liable to this decomposition, a similar treatment of carbon prints and photo-relief prints would probably tend to remove any possibility of instability.

The enquiry is an important one, and if any doubt of permanency exists which can be set at rest by further care or the use of another agent, the extra trouble ought not to be a barrier to the application of an additional safeguard.

The use of tannin would, however, be attended with some difficulty, from its tendency to discolour the whites. It has already been tried by Mr. Woodbury in the course of his early experiments, and its use discontinued because of the unsightly precipitate formed on the prints. The value of alum, or, rather, of the compound which alum forms with gelatine, is, perhaps, scarcely sufficiently appreciated in the remarks in question. Paper-maker's size, or gelatine prepared with alum, will, no doubt, readily decompose if kept in a moist state in summer; but the same size when once applied to paper and desiccated runs no such risk, and a well-sized paper, which is the analogue of a carbon or photo-relief print, kept dry and with ordinary care, is as permanent as can be fairly desired. Leather, which consists chiefly of gelatine combined with tannin, is, of course, a tolerably stable substance; but animal skins are not in all cases preserved with tannin in the manufacture of leather. In the process of "tawing" by which the skins of sheep and kids are produced for finer purposes than common leather, tannin is not used, alum being the chief preservative agent employed; and the resulting products—kid gloves, for instance—are not very liable to decomposition. The subject, however, is important, and should receive the careful attention of those engaged in the production of carbon photographs.

IMPURITIES OF RAIN WATER.

Photographers are at times apt to consider clean rain water as the equivalent to pure distilled water. A recent report by Dr. Angus Smith gives startling evidence of the fallacy of this opinion. By a tabular statement of the amount of ammonia found in different examples of rain water, it appears that in Manchester six grammes of ammonia were found in a cubic metre of the water, and in London as much as half that quantity. Dr. Smith says:—

"Here we have it clearly put before us that the towns contain a great deal of ammonia. This comes mainly, I suppose, from the coal burnt, and the larger quantity in Manchester air agrees with other results." Other contaminations present in rain water are described. "Gernez," he says, "has found sulphate of soda in the air; I always found fixed alkalis, and, speaking of animalcules, said, 'These creatures are sufficient of themselves to show the existence of phosphates, whilst sulphates and lime may be readily obtained.' Oxide of iron is very distinct, and all the substances found in coal ashes. When two hundred cubic centimetres of rain water are boiled down to a few drops, and the whole allowed to evaporate spontaneously, a mass of crystals is obtained. When the crystals are heated and the residue sublimed, the ammoniacal salts come off. In the case of Manchester, the sublimed matter was chloride of ammonium, showing that in all probability the free acid is hydrochloric, the sulphuric acid having seized the base and set the hydrochloric acid free. Sulphate of soda is the principal residuum."

The diagram shows the crystals obtained from the rain of different towns to be very distinct in shape and character; but in every case there is sufficient to account for photographic failures where the use of rain water has been depended upon as a pure article equivalent to that obtained by distillation.

QUININE AS A SUBSTITUTE FOR YELLOW GLASS.

The results of Mr. Spiller's examination, given on another page, of the value of sulphate of quinine as an adiactinic agent, which, in accordance with our recent suggestion, he has just re-investigated, are worthy of attention. From the results gained, it appears that in no case was the slightest indication presented that a solution of this substance would arrest the passage of the chemical rays in a degree to be of any value in photographic operations. Solutions of various degrees of concentration were employed, the layer being about five times the thickness of that mentioned by Professor Morren; but in no instance did the quinine screen thus formed arrest the actinic rays in any valuable degree, an image on a sensitive collodion plate being in every instance formed during an exposure of a second.

The enquiry naturally arises, then, as to the cause of the successful use of such solution by Professor Morren and by our correspondent Mr. Ford. In relation to the statement of Professor Morren we can make no answer. In the case of Mr. Ford the explanation is easier: he did not use sulphate of quinine alone, but supplemented it, as we understand, with another salt. As, however, he is preparing a detailed statement of his experiments in this direction for our readers, which we hope to place before them shortly, it is unnecessary to enter further into the matter at present.

SOME REMARKS SUGGESTED BY THE ALKALINE PROCESS.

BY WM. BLAIR.

Some write to give information; others to ask it. Both are often useful. Question and answer expressed or implied is the natural process for eliciting truth. At present I wish to act the catechist on a few points that I crave light upon. A little chemical erudition might put me all right, but what I lack in that others will, perhaps, kindly supply.

Mr. Sutton's new process is announced to be *much more* sensitive than the common wet collodion process, and he states that the film loses none of its sensitiveness by being allowed to dry. If this be true, it is surely important; and therefore the first question I would ask is this: Has this process been carefully and thoroughly tested by other competent parties, and, if so, with what result?

I do not enter here into the question how far the process as defined by Mr. Sutton is original, or to what extent he is indebted to others for it. The principal or only thing he seems to claim is the exclusion of acid from *every part* of it. The first grand point, however, to settle is, what is the value of the process? If it is found not to be of much value—by which I mean superior to other well known processes—then it will not be so tempting to contest the matter of authorship. But if otherwise, there will be time and opportunity to settle the claims of authorship when the process itself is tested and approved.

I would further ask: Is it really of great consequence, as alleged by Mr. Sutton, that the bath should be neutral and the collodion also neutral? Is it not sufficient, practically and theoretically, that the film be neutral or alkaline at the time of exposure? If acid is adverse to sensitiveness, should it not be enough to have it absent when the light is admitted? Even with an acid bath, if the plate is well washed after being sensitized, the acid must be reduced to a minimum; and if an alkaline "organifier" is then poured over the plate, one would imagine that any deleterious trace of acid would be annihilated. Can any person tell me if such would not be the case, or whether, as Mr. Sutton seems to think, a neutral or alkaline salt is thereby formed in the film antagonistic to sensitiveness? I put these questions because I think it will be to some extent unfortunate for this process if one must keep a special bath and collodion for it that may not work well with any other process.

We know that very high sensitiveness has been attained by the tannin process, wet and dry. I have pictures of cattle, ships at sea, &c., taken by dry tannin plates. The exposure must have been very short—almost instantaneous. Does the wet or dry alkaline process above referred to surpass that process in rapidity and certainty? Mr. Sutton has not yet announced, as far as I am aware, the taking of instantaneous pictures.

Some years ago I took to the exposing of alkaline films prepared by the tannin process. My plan was simply, after good washing, to pour on the alkaline *developer* before exposure, and by this method I had the satisfaction of seeing the picture half developed by the time I got it out of the dark slide. I fancied I had got a quick method, but I tried it against other well-washed tannin plates, and although the films which had previously been treated with the developer seemed to have the start to begin with, I found so little difference in the final result that I did not deem it worth while to persevere. At this time I also consulted with an eminent tanninist as to the benefit that might be expected from the use of an alkaline bath, but was advised that a little acid contributed much to expedite the sensitizing of the film, and as the washing afterwards removed all, or almost all, trace of the acid, little would be gained or hoped for from the bath being kept either alkaline or neutral.

A very rapid process, whether wet or dry, will, of course, have its value; but for amateurs such as myself, who can generally spare only a few minutes at a time to take the portrait of a friend, it will be very difficult to supersede the present wet collodion process with iron developer. By that process I can take three or four negatives in the course of the time required to prepare one of Mr. Sutton's plates. This rapidity is a great desideratum in such circumstances. But with a rapid *dry* process I could also manage very well, for although the plates should take some trouble to prepare, they might be so prepared over night, and be ready for exposure next day, or any subsequent day, at a moment's notice. Acting on this idea, I have lately been trying some plates with ordinary bromo-iodized collodion. After sensitizing and washing, some of these have been flowed with tannin, and well washed, then with alkaline gelatine, and washed, then with alkaline gelatine, and washed again. I have found both about equal in sensitiveness, and both about as sensitive as my ordinary wet collodion; that is to say, I have found no difficulty in taking portraits with them in ten, fifteen, or twenty seconds, according to the light; but, of course, the development is a more tedious process than with the ordinary method; only, it can be delayed till one has leisure for the operation.

I observe that Mr. Sutton does not attribute very great sensitiveness to the ordinary wet process in comparing it with his new method. And here is another of my queries: If the same care be exercised with the ordinary wet process, that he has taken with the alkaline process, to have everything in the highest working order, is he sure that equal sensitiveness will not be attained? Whence all those so-called instantaneous pictures that we have seen, read, and heard of, for many years? Were they not all or mostly taken by this process? I recollect some six or seven years ago taking the negative of a child in a girl's arms with my *landscape* lens, focus about fourteen inches, on a full plate, with an exposure of three seconds. Under the same circumstances with my *portrait* lens, one second or less would have been sufficient; but with my present chemicals, or with those that I *usually* get in this quarter, I could no more accomplish that feat now than fly in the air. I suspect *cheapness* is to blame for this in some degree, and that with pure chemicals, even with a little acid, great sensitiveness is attainable. If, then, two processes are put in comparison, should they not be both wrought under equal advantages?

I may here note a little fact that attracted my attention the other day. I had a dry sensitized plate in my box. It was prepared, I think, with tannin and alkaline gelatine, and well washed after each application. My plan is to wash the gelatine off after it has been a short time on the film, as is generally done with albumen. I find it leaves sufficient trace to strengthen my collodion, and that is what I chiefly need it for. I was about to expose the plate referred to, when it occurred to me to try my old plan (which I formerly adopted only with wet plates) of first pouring the developer over it, before placing it in the dark slide. This I did, then drained a little, and shut it up. The plate got a *full* exposure as for wet collodion. A few minutes, however, had elapsed before it was exposed, and when I opened the slide in my dark room, one half of the plate had again become dry. I proceeded with the development, however, and found, contrary to my expectation, that while the dry half was easily and soon brought up to printing density, the other half remained so far behind as to be comparatively very feeble; indeed, I failed to bring it up till fog set in.

The drying, and consequent condensation, of the developer on the one half of the plate may have given increased sensitiveness to that portion of it—at least, made it more developable; but it occurred to me also, as not unlikely, that the light might also have more power upon it, as a deader surface, than upon the other half, which, by remaining wet, would *reflect* much of the light thrown upon it. The lesson from this, however, is, whenever there is risk of the plate partially drying before or in course of exposure, to let it wholly dry before placing it in the camera, or to mix the developer with honey or glycerine, so as to keep it wet for the necessary time.

There is one material advantage claimed for the alkaline development over that of iron or acid pyro and silver, viz., that the image comes up free of all chemical halation or blurring in those outlines where strong constrasts meet. It appears to me, however, that this sort of blurring may be greatly avoided in the ordinary processes by the use of strong and rapid developers. At one time I was in the habit of developing collodion plates with gallic acid and silver, leaving the developer a long time on the plate to bring up the picture. I found that this process had a tendency to produce blurring to a great extent, and I think it will be found that the quicker the developer works, the less this defect will appear, which, of course, must not be confounded with optical halation, arising entirely from other causes. Rapidity of action prevents the opportunity of one part stealing silver from another, and favours a more equitable distribution of the precious metal. Acting upon this idea, I lately made up an iron developer so strong that it was difficult to pour it on a plate with the necessary regularity to avoid stains; but I made it in sufficient quantity to use it as a bath. I dip the exposed plate into it with a regular movement as when sensitizing. The image flashes out at once. There is no time for the undue accumulations called blurs, and I have seen none of them by this method. If the image is once all up, it may be strengthened a little with silver if necessary, but this is not always needed. Perhaps others may try this plan and report upon it. If used in the shape of a bath, the iron may be raised to almost any strength without much acid.

Bridgend, Perth, October, 1869.

THE ASPECTS AND PROSPECTS OF PHOTOGRAPHY.

BY SAMUEL FRY.*

At the commencement of a new session it seems but reasonable that we should take a review of the position occupied by our art science, and the prospects which present themselves in the future. Surrounded on all sides by evidences of a changing order of things, with hostile hands stretched forth to alter or change the most venerable institutions into conformity with modern ideas, it is not likely that photography and photographers would escape criticism. Nor is such the case. The claims made by many professors for full admission to the the society of artists, and for their works as art productions, however reasonable in appearance, are not conceded. The photographer does not rank socially with the painter, the sculptor, the dramatist, the *littérateur*;

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* Read before the South London Photographic Society, October 14th.

he still, in the eyes of the majority, occupies an anomalous position, having no exact parallel in the world: he is a photographer. Of course there are photographers and photographers, as there are painters and painters, and the acquisition of reputation is an individual work, the result of long labour and constant and persistent effort. Meanwhile, as we look around, there are manifestly points upon which all can do no other than agree. Photography is more than ever required, and now, more than at any previous time, are its highest results in continued demand. Active minds and skilled fingers in all parts of the world vie with one another in adding to our stores of knowledge. Never, probably, since photography became the subject of history, has there been such a wealth of invention and discovery as of late.

Many have feared, and still do so, that our method of printing by silver may be supplanted by a mechanical process, which, simply requiring a suitable negative, shall rapidly produce thousands of copies at a low rate. Nothing is more probable than that something of the kind may occur; but not at present. Even when this comes to pass, the skilled photographer will still be demanded for the production of the original negatives. The processes towards which attention is mainly directed for supplanting silver printing by mechanical or other means are the carbon or autotype, and those of M. Albert of Munich, and Mr. Woodbury. The first of these three—the carbon—differs from the others, inasmuch as it requires an application of the original negative for each copy, whereas Mr. Woodbury and M. Albert each employ *cliches* or moulds of metal or glass, from which the copies are printed in large numbers with complete success. In power of production for large quantities it is obvious that either M. Albert's or Mr. Woodbury's greatly exceed the carbon, and the issue, therefore, resolves itself into a question of beauty of result and commercial enterprise. I may, perhaps, here be allowed to make the admission, as a confession of faith, that I consider a fine silver print on albumen paper to be one of the most lovely objects that it is possible for any graphic art to produce, and that any process, to surpass it, must indeed produce fine results. The evanescent character of our silver prints is, in a great degree, remedied; and where fading still occurs, it is from carelessness or neglect, either in printing or in the owner of the print.

For book illustration photography is peculiarly valuable; and one of the leading London publishers, who has, during ten years, issued large numbers of capital books illustrated by silver prints, states that no single instance of a picture fading has come under his knowledge. The new methods may, and probably will, strike out a path for themselves, but years must elapse before we give up silver printing. More albuminized paper than ever is made and used.

The comparative excellence of British and foreign photography is an oft-discussed subject, and one that sometimes occasions a little heart-burning

In Paris, in 1867, with the exception of landscape (not an important branch), we were beaten, and the result was just what might have been expected from the Anglo-Saxon race: first incredulity, and then a determination to find out in what the difference really consisted. It was not gratifying to our nation to find that works surpassing our own were produced by instruments which we are apt to think inferior to those of our great makers, and that hints were given that better work was yielded from our own maker's lenses abroad than at home. Seeing was believing. The works of Adam-Salomon, of Reutlinger, of Ghemar Freres, of Carl Luckhardt, of Angerer, extorted admiration from all beholders. It was not alone by Parisians we were excelled, for representatives from most of the capitals of Europe sent contributions that made us feel uncomfortable.

One of the earliest thoughts that strikes one after the lapse of a sufficient length of time to enable one to calmly review the whole matter is, that in those countries where art has been most fostered are the best photographs produced. This is a clear evidence that a mere intuitive sense of the beautiful is not sufficient alone to produce good pictures. A shoemaker requires—or, at all events, devotes—seven years to learning the mysteries of his craft. How long does a photographer devote to his?

I was confidentially informed by a sitter, a few days since, that by purchasing a shilling pamphlet on photography, and religiously following out its instructions, any one could speedily become a good photographer. But, I think, there can be no doubt on the mind of a reasonably careful observer that a *renaissance* has taken place since the Paris Exhibition. At first a little angry feeling was aroused, owing to a belief in many that the fine pictures shown were not so entirely the result of pure photography as we should like; but nothing has occurred which can throw any doubt on their being such, and that great skill, both in manipulating, posing, and lighting, are really the qualifications required. The pictures of M. Adam-Salomon were, fortunately, procurable in the market, both in London and Paris, at prices reasonable when we consider the great individual care bestowed on each print.

It seems to me here a proper time to remark, *en passant*, that one of the points indicated to me by a friend who travelled recently through Europe, and who, at my request, took special notes for me on photography and photographers, is, that in the capitals on the Continent, as also the chief towns, he found photographers executing pictures of larger dimensions, and generally more important appearance, than is often in demand here; and he remarked that the public seemed to willingly commission such things. I believe the cause is readily to be explained: here very few make a display of such work, or, if they do, it is not of a very high character. Some say that prices sufficiently remunerative cannot be obtained; but I believe this objection would fall to the ground if really fine work were shown.

We all know by this time how to build a good studio, or, if we do not, it is from not having read or properly studied the instruction given so frequently. The best studios have the simplest light and the fewest blinds. It is indispensable that we endeavour to raise the standard of our work, and to induce the public to go in for a grander style and size than the carte. Some think the practice of having photographic portraits to hang up in houses is on the decline in England, but I think this to be an error. Within the last few years the increase in the number of studios of high character in the provinces of England has been very rapid, and it is to this that I attribute the falling off which so many London photographers complain of, as persons who patronized London artists, waiting for that purpose until they visited town, are now able to obtain all they desire in the country, with the advantage of better light.

Only a small proportion of the best photographers contribute to exhibitions, and it would be an injustice to a large body to suppose that those who abstain do so from their inferiority. Such is very far from being the case. Unfortunately, it may be attributed to a kind of apathy or want of *esprit de corps*. The London photographic societies have, in great measure, fulfilled the objects for which they were established, and the numbers ordinarily resorting to their meetings are greatly diminished. This is also caused by the spread of information and the complete communication established by the journals, also by the circumstance that many of the points of great general interest and continual discussion have been satisfactorily settled.

Gentlemen, in conclusion, let us not fail to place before the world our very best work; let us carefully study the special excellences of the productions of the best masters, and consider to what points they owe their success, and then, without slavish imitation, avail ourselves of them. To the careful and conscientious photographer, a good appreciation is sure to come sooner or later, for art knowledge is rapidly spreading, and people now look for far higher qualities in photographs than they did a few years since.

QUININE AS A NON-ACTINIC MEDIUM.

BY JOHN SPILLER, F.C.S.*

In the last number of this Journal appeared a translation of a paper on "Some Phenomena of Decomposition produced by Light," recently presented by Prof. Morren to the French Academy, in the course of which the author recommends the employment of a glass cell, of about one-fifth of an inch internal width, charged with a solution of sulphate of quinine, as a means of introducing a quantity of white light into the photographer's operating room, which is incapable of affecting a sensitized collodion plate. In reference to this suggestion, and to a similar proposal made three years ago by M. Obernetter, we pointed out, in a leading article which appeared in the same number of the Journal, the discrepancy between these statements and the results at which Mr. Crookes arrived in his researches on the subject in 1853†; and having had the good fortune to assist at some of Mr. Crookes's early experiments in this direction, and again, quite recently, had an opportunity of inspecting the valuable records of these results, we felt no hesitation in questioning the accuracy of M. Morren's observations. The great importance of the subject, and the suggestion made some weeks since by the Editor in the pages of the Photographic News, rendered it necessary to re-investigate the matter, and the following experimental results and conclusions must be considered as supporting the view which is currently believed in regard to the optical properties of sulphate of quinine.

A fine sample of this salt, procured from Messrs. Davy, Yates, and Routledge, was dissolved in water by the aid of a minimum amount of sulphuric acid, in the proportion of one ounce of sulphate of quinine in a pint of water, thus making what may be termed a five per cent. solution. The epipolic character of this liquid is not nearly so well marked as with solutions of lower degrees of concentration, and other experiments had, therefore, to be made with one per cent., or less, of the quinine salt in solution, which then showed a beautiful blue fluorescence. Besides trying the sulphate in this form, one experiment was made with an addition of common salt, which, as pointed out by Prof. Stokes, at once destroys the fluorescence.‡ With regard to the apparatus employed, I found it convenient to use an ordinary camera, reared upright, with the lens removed, and the circular aperture covered with a glass beaker containing the quinine solution, all extraneous light being excluded at the junction by wrappers of black velvet, and the top edge or rim of the glass vessel was likewise screened from the light, so as to avoid direct transmission through the substance of the glass into the camera. Into the dark slide, or "carrier," was temporarily fitted a slip of wood, placed diagonally, so as to throw a corresponding shadow upon the sensitized collodion plate behind it. Mawson's bromo-iodized collodion was employed with an iron developer, and several plates were exposed in succession for the intervals of time and with the varying depths of solution specified below:—

Expt.	Quinine Solution employed		Time of Exposure.	Results.
	Strength.	Depth.		
I.	5 per cent.	1¼ inch	15 seconds	Image very much over-exposed.
II.	1 ,,	1¼ ,,	5 ,,	Image over-exposed.
III.	½ ,,	2½ ,,	1 second	Distinct impression.
IV.	5 ,,	⅓ ,,	1 ,,	Do. do.
V.	½ ,,	⅓ ,,	1 ,,	Do. do.
VI.	½ (with salt)	⅓ ,,	1 ,,	Do. do.
VII.	5 per cent.	1 ,,	1 ,,	Do. do.

Considering that these experiments were made on a dull October afternoon, with rain falling at intervals, and that dense negatives were obtained as late as five P.M., with exposures not exceeding one second, I conclude that it would be utterly impossible to substitute this mode of illumination for the yellow glass at present employed in "dark rooms." It is not even necessary to inquire into the practicability of using quinine for the purpose of screening off a portion of the highly refrangible rays,—particularly the violet and others in the invisible part of the spectrum,—since those extending from a point below the violet down to the middle of the green exert so powerful an action upon a bromo-iodide of silver plate, that unless these coloured rays were intercepted, no practical advantage would be gained.

An optical examination of the quinine solutions through a spectroscope showed how little the visible spectrum was curtailed, and it was found that all the active rays below a point situated a short distance above the region of the fixed line G streamed through the liquids with unimpaired intensity, a circumstance which rendered almost superfluous the institution of these experiments.

Since making, however, the above experiments, I have found a singular confirmation of my results in the statement of Mr. Robert Hunt, recorded in this Jonrnal at page 16 of the first volume. At the ordinary meeting of the Society of March 3rd, 1853, Mr. Hunt said:—"It occurred to me this morning that it might be readily determined whether or not the solution of sulphate of quinine stopped back the chemical rays, and, if it did not, this would prove that those blue rays which were not allowed to pass could not be the rays by which chemical changes were effected. Consequently I tried a very rough experiment, which, in its way, is sufficiently satisfactory. I placed upon a piece of paper, which was washed over with the ammonio-nitrate of silver, a glass box, which was filled with a solution of quinine, the depth of the fluid being a little more than an inch. I found that upon that part of the prepared paper where the rays freely passed through the whole of the fluid, it was darkened as much as where it had been exposed to the full influence of the sunshine. Here we have a proof that the sulphate of quinine, which does not allow the epipolic rays to pass, does admit the chemical rays without interruption."

Mr. Hunt subsequently modified this view, in consequence of the precise nature of the quinine absorption having been pointed out by Mr. Crookes. The fact stands good, with the following qualification:—Sulphate of quinine, which does not allow the epipolic rays to pass, *does admit most of the chemical rays included in the visible portion of the spectrum* without interruption.

PS.—Since writing the above account, we have been favoured with the following communication from Professor Stokes, who refers for specific details to his paper on "Fluorescence," printed in the *Philosophical Transactions* of the Royal Society for 1852:—"As to the quinine solution, it will transmit, even when strong, rays from the extreme red up to about the line G. It will therefore not by any means stop all chemical action on the salts of silver, but it would go far nearer towards stopping all action in the case of iodide than bromide preparations."

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* *Photographic Journal.*

† Vide *Photographic Journal*, Vol. I. p. 100.

‡ *Journal of the Chemical Society*, May 1869, p. 174.

THE ACTION OF LIGHT UPON MINERAL OILS.

BY M. GROTOWSKY.*

Under the influence of the sun, mineral oils possess the property of absorbing oxygen from the air, and converting it into ozone. No chemical combination takes place, for the ozone remains free, and easily oxidizes any bodies placed in contact with it. The odour of these oils when containing ozone is completely modified; they are incapable of burning, and, moreover, act injuriously and rapidly upon cork stoppers.

The colour of the glass vessels containing the oils influences considerably the absorption of oxygen. After an investigation extending over three months, results have been obtained confirmatory upon the following points :—

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* *Moniteur de la Photographie.*

1. The photogenic or solar oil preserves all its properties intact when enclosed in iron barrels.

2. When enclosed in vessels of white glass, and protected by straw, little, and but slightly injurious, modification was apparent.

3. Vessels of white glass painted black were not sufficient to protect the oil from absorbing traces of ozone, but the stoppers were not attacked.

4. Vessels of white glass, unprotected.—In these the oil became much charged with ozone, and burnt very badly: in colour it became of a very marked yellowish tint, and its density increased by 0·003.

5. Vessels of green glass, unprotected.—The oil became charged with ozone, but burnt well notwithstanding; the cork stoppers were attacked, and the colour of the oil became modified.

6. Vessels of green glass, painted black.—Ozone was absorbed, but no apparent modification was appreciable.

7. Vessels of green glass covered with straw.—Traces of ozone were apparent, and the oil assumed a slight yellowish tint. No defect was, however, to be observed in burning.

8. American petroleum enclosed in vessels of white glass, unprotected, was much charged with ozone, and would scarcely burn in consequence; it became of a yellowish tint, and its specific gravity was augmented by 0·005.

9. The same oil screened from the access of light underwent no change.

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THE EXPENDITURE OF SILVER IN PRINTING.

BY PAUL SCHIMPKE.

In my printing operations I find that I employ less silver than that set down by M. Meicke in his investigations conducted some time since. My bath was made up of—

Nitrate of silver	... ...	10 grammes
Nitrate of soda	... ...	10 ,,
Water ...	... ...	200 ,,
Ether ..	... ...	2 ,,

After seven sheets of albuminized paper (sixteen and a-half by twenty-two inch) had been sensitized, and the contents of the bath diminished to 175 cubic centimetres, twenty-five cub. cents. of water was added, in which five grammes of nitrate of soda had been dissolved, and likewise a few drops of ether, and two more sheets of paper were then sensitized. At this stage the albumen film began to dissolve from the paper. I hoped by evaporation to render the bath again serviceable, and added, therefore, a few crystals of permanganate of potash, stood it for an hour exposed to daylight, filtered, and evaporated to half its previous volume. My trouble was, however, in vain, for on floating another sheet the albumen again became dissolved. I was wanting in the necessary chemicals and apparatus to determine accurately the amount of silver remaining in the bath, but, from the number of sheets sensitized and quantity of silver used, not more than 1·1 or 1·2 gramme of nitrate of silver was absorbed by each sheet.—*Mittheilungen.*

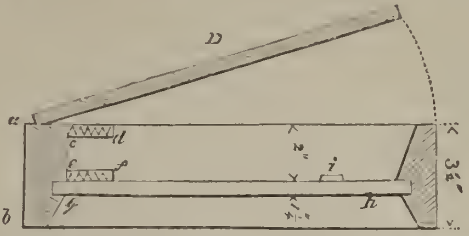
◆

WOODEN BATHS FOR AMATEURS.

BY PAUL SCHIMPKE.

For several weeks past I have employed, with great success, a wooden utensil constructed after the adjoined sketch, both as a negative and positive silver bath.

The sides of the receptacle are of birch wood, the bottom, *g h*, being of stout sheet glass, and the projecting portions, *c f* and *c d*, of quarter-inch patent plate. The lower portion of the utensil serves, in an inverted position, for the positive bath, the upper for the negative; *i* is a thin strip of glass to hinder the prepared plate from coming into contact with the bottom of the bath, and so becoming set fast by adhesion. The wood portions of the vessel are coated with asphalte varnish, and the glass plates cemented with red lead, which is also completely covered by the varnish. The space *c, d, e, f* is suitable for six by seven plates, about 300 cubic cents.



The employment of the bath is very simple. It generally stands on end at *a b*, a piece of wood on the table preventing the lid D from opening wider than shown in the sketch. The plate is placed, with its prepared side uppermost, upon the projection *f*, and the bath then tilted backwards, by which operation the lid shuts, and the liquid flows from the recess over the plate. When the latter has been sufficiently long in the solution, the bath is again placed on end, tilted slightly forward so that the plate falls against the lid, and becomes properly drained, after which it is easily transferred to the dark slide.—*Mittheilungen.*

◆

DUCHEMIN'S ENAMEL PROCESS.

BY PAUL SCHIMPKE.*

This process appears specially suitable for many purposes, as it is conducted without the aid of collodion, and without transferring. The glass to be used for the purpose must be of a description more difficult to fuse than the layer of enamel placed upon it, and yet of a nature to form a homogeneous mass. The enamel is compounded of the following ingredients, viz.:—

Arsenious acid	... ...	30 grammes
Saltpetre	... ...	30 ,,
Litharge	... ...	250 ,,
White sand	... ...	90 ,,

When faced with this material, the plates are carefully ground until a perfectly even surface has been obtained, and then polished; they are now coated with a liquid prepared as under, which is allowed to become dry upon the surface :—

Water	... ...	100 grammes
Gum arabic...	... ...	4 ,,
Honey	... ...	1 gramme
Crystallized bichromate of potash		3 grammes

To produce a picture, four simple operations only are necessary, for the performance of each of which but few minutes are required; they are—

1. Exposure of the sensitive glass under a positive.

2. Development of the picture by the application, with a badger-hair brush, of a powder compounded of—

Oxide of cobalt	.. ...	10 grammes
Black oxide of iron ...	...	90 ,,
Red lead (vermilion) ...	...	100 ,,
Sand ...	... ...	30 ,,

3. Decomposition of the chromate salt by immersion in a bath of—

Water ...	... ...	100 grammes
Muriatic acid ...	... ...	5 ,,

and then washing the image in pure water and allowing it to dry.

4. Burning-in of the picture upon a flat cast iron plate covered with a uniformly thick layer of powdered chalk, in a muffle furnace heated to a proper temperature; a few minutes are sufficient for the purpose, and then care must be exercised that the plate cools slowly.

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* *Photographische Mittheilungen.*

THE PERMANENCE OF CARBON PRINTS.

BY J. SPILLER, F.C.S.

On a recent occasion we have had an opportunity of comparing a series of proofs taken by the new systems of carbon printing with other impressions produced from the same negatives by the ordinary method of printing upon albuminized paper sensitized with the salts of silver, and, as the result of such comparison, we have been very favourably impressed with the superiority of the carbon print in all cases where good artistic gradation and breadth of effect are the objects pre-eminently sought. If, on the contrary, it should be desired to secure the rendering as sharply as possible of certain details and minutiæ, such as hieroglyphics and inscriptions, we are inclined to believe that the continued adoption of the old process in the reproduction of such subjects will have its advantages. Foreseeing, however, an important career for the various systems of carbon printing, Woodburytype, and other processes wherein gelatine combined with pigments constitutes the groundwork of the record, we are tempted to inquire whether the present mode of working is the best that can be adopted for the purpose of hardening the gelatine, and rendering it so unchangeable by time that the permanent attachment of the inclosed pigments to the paper support or tablet may be unhesitatingly relied upon. One phase of this question came before the Society in the course of the discussions which followed Mr. Woodbury's description of the photo-relief process, and Mr. J. R. Johnson's demonstration of his simplified modes of transfer and processes of carbon printing given at the meetings of March and June last; but we believe it may be correctly asserted that up to the present time a solution of alum has always been resorted to for the fixing of the Woodburytypes, and a salt of chromium used in combination with gelatine in the carbon prints.

We start, then, on chemical grounds to investigate the evidence bearing upon this all-important question. Under what circumstances may carbon and other pigments be best preserved in a matrix of gelatine? There is no fear of the lamp-black itself or well-selected mineral pigments undergoing any change in the course of time; and the history of letter-press printing and engraving furnishes the proof of great durability being secured by the combination of blacks with slowly drying oils which harden upon exposure to the air; gum, as used in the preparation of India-ink, seems also to be very permanent; but when gelatine is the substance employed, there is the possibility of a kind of animal decomposition being set up of a nature not widely different from that which cartilage and even bones are known to undergo by long exposure to air and moisture. Alumina, oxide of chromium, phosphate of lime, clay, and other earths are, so far as we are aware, unable to prevent this change, and the admixture of finely divided charcoal may even expedite it. On the other hand, we have evidence, in leather and parchment, of the remarkable durability of gelatine which has been treated with tannin or other astringent substances: animal skins left in their naturally moist condition soon begin to change; glue can hardly be manufactured in summer-time without exhibiting signs of incipient decomposition; and paper-makers' size prepared with admixture of alum keeps good for a short time only in hot weather. Let the skins be converted into parchment or leather by tanning with oak-bark, galls, sumach, valonia, or catechu, and they enjoy a greatly prolonged tenure of existence; moisture is not then nearly so detrimental to them, and their insolubility is placed beyond doubt. Some marvellous examples of the preservation of animal organisms were shown two years ago by Dr. Abbati, of Naples, in the Paris International Exposition; and these were commonly supposed to have been treated with a solution of mixed astringent and antiseptic substances, of which tannin formed the chief ingredient. Thus we are assured that gelatine and tannin, although each incapable of being kept for any length of time in solution, can be perfectly preserved from change when thrown into a form of combination; and it suffices to immerse the Woodburytype impression in any pale solution of tannin, in order to effect the same end as is usually accomplished by the use of alum. We have treated a couple of prints in this manner, and succeeded in fixing the gelatinous ink without detriment to any quality which characterizes the finished result of Mr. Woodbury's ordinary operations. The cost of the tannin cannot be appreciably felt in these high-class applications, even when the best commercial quality is employed; but if this should, for some purposes, be considered a matter of consequence, there are still the infusions of sumach and nutgalls to be held available as cheaper substitutes. Tannin is readily soluble in warm water, and a diluted solution may be kept in stock, if mixed with a drop or two of carbolic acid; it is non-crystallizable, so that the retention of a small quantity of tannin in the picture need not be feared as in the case of alum, which by crystallization may tend somewhat to disintegrate the paper. In our own trials a very slight washing was judged sufficient for the removal of the excess of tannin, and it is manifestly advantageous to avoid too prolonged an immersion of the print in pain water.

By way of conclusion it may be remarked that the thin film of wax left upon the carbon prints transferred, according to Mr. Johnson's plan, from zinc plates is likely to have a beneficial influence in protecting the proof from atmospheric action; but we would suggest that a supplementary tannin-process might even in this case prove advantageous.—*Photographic Journal.*

PINHOLES.

BY F. M. SPENCER.*

Much has been said about "pinholes" and the various modes of producing them, but I have observed one not very unfrequent cause of the trouble that I do not remember to have seen mentioned by any photographic or other publication I have read, which is this: using an alkaline bath with an acid collodion, and *vice versâ*, causing effervescence to take place in the film. I have seen these markings cover a plate with countless numbers of a star-like form, varying in size from that of the head of a pin down so small the eye could scarcely detect them. But it does not follow that marking should always be star-like; when caused by want of harmony between the collodion and bath, the violence of the action and the character of the collodion film will modify their appearance very much. If the bubbles form upon the surface of the film only, they will not look like those formed within the film or beneath it, accumulating with force enough to break out, exploding, as it were, that portion of the film obstructing its escape; but where surface action only has taken place, the bubbles will mostly be released when the plate is taken from the bath, and the subsequent action of light and developer will disclose markings analogous to "freckles" in chemical effect; or, if more vigorous, clear spots of a round or oblong form, showing that the film ceased to sensitize as soon as the bubbles began to form. Similar clear spots may occur by small particles of air adhering to the film when plunged into the bath. If many of my fellow "disciples of the black art" would study their "pinholes," I opine they will sometimes discover that I have indicated their true cause. In correcting such differences between the bath and collodion, I prefer to work with the bath, as it is much easier to manage than collodion.

I do not suppose these ideas are new, as others must have observed the same things; but you are at liberty to use them as you think most profitable.

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* *Philadelphia Photographer.*

Correspondence.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

Sir,—I notice in a contemporary a statement which seems designed to injure the South London Photographic Society, and being utterly untrue, it ought not to go uncontradicted. The writer says that not long ago he strove long against a clique in the Society to which he is referring, without gaining any other result than injurious and annoying attacks upon himself; that therefore he terminated at once the struggle and his membership; and that subsequently he was refused permission to attend the meetings of the Society, to report the proceedings, on the frivolous plea that he was not a member.

Will you premit me to state the actual facts? They are these:—The writer in question, having availed himself for several years of all the privileges and benefits of membership of the South London Society, attending meetings and receiving presentation prints, without paying any subscription, was pressed, in accordance with rule, for payment; upon which he sent in his resignation, without, however, paying his arrears of subscription. He at the same time requested permission to attend the meetings of the Society as a reporter for a photographic paper. His resignation was accepted, and, in accordance with a resolution of the committee, the payment of his arrears was forgiven him. It was then agreed—on the motion, I may add, of the editor of another photographic journal—that the desired permission should be granted, and a notification to that effect, and that the claim for arrears had been remitted, was forwarded to him. Soon afterwards, having attended a meeting as a reporter, in accordance with the permission asked and granted, the said writer published a report containing false statements and offensive comments. This was brought under the attention of the committee by a member of the Society, who pointed out that the liability of such misrepresentation must tend to close the mouths of members, and utterly destroy the cordial freedom of discussion which had hitherto prevailed in the Society. It was felt by the committee that the issue of incorrect reports and insulting comments, made with a manifestly rancorous animus by a person attending the meeting by privilege, and not by right, was not to be tolerated, and it was resolved unanimously that the permission before given should be withdrawn, and the reason stated. This was done, and the Society was saved from an element of evil, "like a fly in a pot of ointment, insignificant, but irritating."

It is not necessary to comment on the alleged "frivolousness" of regarding non-membership as a bar to the right of attending a Society's meetings, although in this case no such reason was given; nor upon the cry of "cliqueism," so common with disaffected individuals against bodies to which they are in antagonism.

It may be well to add that, in the statement I have felt it necessary to contradict, the name of the South London is not specifically mentioned, but the context and the nature of the allusions leave no doubt of the meaning. I also have avoided mentioning the name of the person concerned, which will be sufficiently familiar to all interested in the circumstances; and I have no wish, in connection with a narrative of unpleasant facts, to publish a name to circles not directly concerned about them.—I am, sir, your obedient servant,

A Member of the South London Committee.

THE FORTHCOMING EXHIBITION.

Sir,—It has occurred to me that the interest of the forthcoming exhibition of photographs would be very greatly enhanced if the contributors were to give a little information upon the margin in regard to their production. It would be a great thing if the description of lens only were stated, as it would show the great body of amateur visitors the capabilities of the various lenses, of which there are now so many. But perhaps this has already been thought of and determined.—Your obedient servant, Nobody.

London, October 19th, 1869.

THE SEA GULLS.

Sir,—I have just returned from a visit to Tunbridge Wells, where I had the pleasure of seeing that great gull photograph which has been a cause for speculation and wonderment during the last few weeks. When so many explanations have been given in regard to the mode of its production, it scarcely becomes an outsider like myself to offer an opinion; but were I to do so I doubt if it would be so absurd as Mr. Johnson's scratching process, or that of the "Stuffed Gull" in your issue of the 15th instant. What I particularly wished to mention, however, in regard to this photograph is this: seeing a copy in a shop window (the name on the door I do not remember) at the lower part of the High Street, left hand side going towards the Parade, I enquired the price, and was told in reply that it was ten shillings and six pence. Feeling that this was not an unreasonable charge for a picture that must have cost a great deal of trouble to produce, I had a mind to purchase, but did not do so at that moment, as I was out for a stroll, and did not care to encumber myself with it. During my stroll I came across another stationer's shop in another quarter of the town, kept by a Mr. Nye, where I saw another of these photographs, the price of which I immediately asked, "without frame." I was very particular about this question, which was repeated both by myself and the attendant. "One guinea, sir," was the reply I received, whereupon I decided not to purchase the picture at any price, at all events in Tunbridge Wells, for, thought I, either Mr. Nye is charging me a most exorbitant price, or Mr. —— (name forgotten) is underselling Mr. Nye. So far as I could judge, the pictures were equally good, and under any circumstances it must be admitted that a difference of a 100 per cent. in a photograph is enormous. I should be glad to know what is the real selling price of this picture.

I had half a mind to call at Mr. Robinson's house, which I passed, to tell him the circumstance, but did not do so.—Your obedient servant, An Amateur.

London, October 18th, 1869.

[Like most fancy articles, photographs are often charged by dealers at any rate they choose, the ratio of profit being entirely under their control, or limited only by the chances of public resistance or non-patronage. But in this instance the photograph was published at a specific price. The price at which the picture was intended to reach the public was half-a-guinea; and at that price it was, we understand, largely sold. The tradesman who asked a guinea had doubtless heard that the negative had got broken, and that therefore no more copies could be obtained, and therefore felt himself justified in taking advantage of the scarcity to secure an enhanced price. It is not uncommon when a book or print is irretrievably out of print for its price to increase in proportion to the scarcity and the demand.—Ed.]

TRANSFERRING A LITHOGRAPH TO GLASS.

Sir,—Would you say if you know how to transfer a lithographic print to glass, and then withdraw the paper so as to leave the ink upon the glass? What (if any) difference in the ink and paper, or coating on the paper, to facilitate the transfer? If the transfer requires to be done immediately after the lithographic copy is made, or how long may be allowed to elapse? The best medium to apply to the glass for causing the ink to adhere?

If the Editor does not know, would he kindly ask any of his readers to communicate the process? I could furnish the name of one who knows, but I fear he keeps it as a secret. P. L.

[We believe that there are transfer varnishes sold by artists' colourmen for the purpose of transferring engravings, &c., to glass. Can any of our readers supply precise information?—Ed.]

COMBINED LANDSCAPE EFFECTS.

Dear Sir,—An easy method of producing out-door views may be used as follows:—

Use a white background, and make up the foreground to the effect required with rocks, pebbles, &c.; arrange your subject and make your negative.

Next make an out-door negative, either of the sea or a land view, the same size as your in-door negative. Print the first negative (the background of which is white), and then place the out-door negative in the desired position, and print, taking care, however, to shade carefully the first printing. If you require gulls, make a good sea negative, print, tone, and fix it. Get your artist to sketch in as many gulls as you think will cause the greatest mania for gulling; make a copy of this, and use in the same way as the other, and you will have gulls to perfection.

I did not like the "Stuffed Gull" suggestion, although a good trade might be carried on—especially at this time of the year—with some photographers in the stuffing line.

Another simple way is to get a good print or painting of the sea, and make a negative of it, plenty of which may be obtained at watering-places, and use this for a background.

I have made numbers of similar pictures during the last ten years, and have even been so fortunate as to get a few live gulls to wink at them.—Yours respectfully, J. Schmidt.

Clifton, October 20th, 1869.

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Proceedings of Societies.

Oldham Photographic Society.

The above Society held their ordinary meeting at the Hare and Hounds Inn, on Thursday, September 26, the Vice-President, Mr. J. R. Heaton, in the chair. After the minutes of the previous meeting had been read,

The Chairman said he had much pleasure in introducing Mr. Kay, of Bolton, who had come before them that night to say a few words about his new photo-lithograph.

Mr. Kay said it gave him great pleasure in coming before them, and wished to call the attention of the Society to a new style of portraiture. The carte-de-visite had had a very long run—in fact, he might say, they never would go out—but they were in want of something new; and he thought that the style he was about to introduce would, if photographers could only be induced to try and push it, be a means of bringing before the public a picture that would excel the carte-de-visite, and, he had no doubt, command a very great sale.

Mr. Kay then passed his picture round, which appeared to give great satisfaction. On being removed from its frame a very brilliant transparency was seen, which, on being backed up with a common tinted mount, had the appearance of a fine lithograph.

Mr. Kay then gave his formulæ for producing the picture, which caused a lengthy discussion.

The thanks of the Society were unanimously awarded to Mr. Kay for the kind manner in which he, as a perfect stranger, had come forward and afforded so much valuable information to the Society, and a hope was expressed that he might make it convenient to be at the next meeting.

Several of the members promised to try the process, and bring their results for discussion at the next meeting.

The meeting then proceeded with the special business.

Photographic Society of Marseilles.

A meeting of the Society was held on the 17th ult., M. Charles Tesseire, President, in the chair.

A communication was received from MM Drivet and Co., enclosing specimens produced by their photo-engraving process, which has lately been considerably improved. Several of the prints were of remarkable execution, but the landscape specimens required improvement.

MM. Weinhold and Co. forwarded a sample of a new description of albuminized paper, which is being manufactured by them under the name of *Victoria glace*.

A letter was read from M. Despaquis relative to his method of obtaining a mould and counter-mould from a gelatine relief, for embossing purposes.

M. Poitevin, who was present, remarked that the idea was not a novel one, and had been suggested by himself as far back as 1855.

A pamphlet on photography and pigments, and entitled "Processo fotografico al carbono," was forwarded by the author, M. Montagna, who, it will be remembered, has offered a silver medal for the best carbon print executed by the author's method.

The President said a few words in memory of M. Leiber, who has died since the prorogation of the Society's meetings, and who had greatly aided in disseminating photographic literature.

M. Leon Vidal presented the Society with an example of his photometer, which has recently received some further improvements. Paper always possessed of a uniform degree of sensitiveness was necessary in the employment of the instrument, but the firm of Marion and Co. was in a condition to supply the wants.

MM. Tesseire and Vidal gave an account of their experience with the carbon process, extending over an interval of three months, and exhibited specimens of their work produced by the Johnson and Marion methods. It was contemplated to publish the results of their research.

M. Vidal proposed the holding of a public experimental conference during the winter, at which the various methods might be discussed and experimented with.

The proceedings then terminated.

South London Photographic Society.

The winter session of this Society was commenced on Thursday evening, October 14th, in the City of London College, the Rev. F. F. Statham, M.A., in the chair.

The minutes of a previous meeting were read and confirmed, and the Rev. Mr. Johnson was elected a member of the Society.

Mr. S. Fry then read a paper on the "Aspects and Prospects of Photography" (see p. 506.)

The Chairman, in the course of some excellent remarks on the paper, said he thought it was scarcely matter for wonder that in the great centres of art-culture and influence, such as Paris and Vienna, some artistic superiority was found in photography; but he believed that in the scientific progress of photography England was in advance of most countries. Even in art excellence, when once the possibility had been shown, English photographers were not slow to put it in practice, and some of Salomon's pictures had been already very closely approached by members of this Society. The doubtful position of the photographer was due, he thought, solely to public ignorance. The public had not yet generally learnt how much of excellence in photography was due to skill in the artist. They held the erroneous notion that good results were entirely due to good apparatus, forgetting that, as in astronomy and other sciences, the apparatus was useless without the cultivated person to use it. When the public came to understand it better, the position of the artistic photographer would be more correctly recognized. As to the literature of photography, he was not aware in what degree continental countries were in advance of England, but thought it probable that the excellence of the English journals rendered other photographic literature comparatively unnecessary. The volumes of the Photographic News and *British Journal*, and the photographic almanacs published, formed quite a photographic library.

Mr. Wharton Simpson, in response to an appeal from the Chairman, said he had little to add to the remarks so ably made from the chair, nor did the statements in the paper admit of much discussion, as, for the most part, they must challenge general consent. Except in the artistic element, England was certainly not behind any other part of the world in photography, and in art photography this country had many notable examples. The influences which form cultivated taste were not so abundant in this country as in some parts of the continent; and hence, perhaps, in art feeling, the mass of photographers in some continental cities surpassed the mass of photographers in England. But in practical and scientific photography England was behind no country in the world. By far the greater part of the improvements and discoveries in photography belonged to England. Its societies were more active, and its journalism more active and extensive. And although it was doubtless true that many English people visiting Paris had their portraits taken there, yet it was a singular fact that although several distinguished Parisian photographers had settled in London, none of them had surpassed the best established English photographers, or attained higher success than they.

After some further remarks from Mr. Howard, the Chairman, and Mr. Fry,

Mr. Taylor exhibited some excellent examples of the angle included by different lenses, and also some fine examples of Woodburytype.

Mr. A. L. Henderson exhibited some samples of permanent sensitive albuminized paper. He remarked that paper which would keep sensitive ready for use was a matter of importance now that the dull foggy weather was setting in. Doubtless all knew the disadvantage of the bad keeping qualities of sensitized albuminized paper. Sometimes there was every appearance of a fine printing day, and, in consequence, a large stock of paper was prepared, when a cloud coming over the scene of operations few or no prints could be got off the negatives. For some years past he had studied to discover the reason why sensitized paper should discolour so rapidly, even when not exposed to light or air. He had tried putting the paper in a receiver and exhausting the air, but this had not the desired effect. Such a research was necessarily slow, seeing that it required months and sometimes years to test the efficacy of each experiment. He should like members to test and report upon the samples now at their service. It could be prepared to keep any length of time; the image was more on the surface of the paper; the paper printed quite as rapidly, if not more rapidly, than ordinary sensitized paper, and the colour of the paper in the printing frame was a beautiful copper colour. Care should be taken not to over-tone, as the paper contained a small quantity of gold, but not sufficient to dispense with toning altogether. He had not tried all the different kinds of toning baths, but he inclined to think that the sulphocyanide of ammonia and gold bath would be the best. He proceeded as follows:—Wash prints; immerse in salt and water to convert any trace of free silver; fix in hypo fifteen per cent., five minutes; then tone in the sulphocyanide bath. With the ordinary acetate toning bath he could get more beautiful, warm, Salomonesque tones than he could with any other paper he had tried. There was none of the nasty yellow-jaundice tone about them. He would ask members not to condemn the paper without a fair trial. He himself at first felt inclined to throw all the prints away as bad, but when they dried they improved wonderfully. In conclusion, he might say that the paper would be prepared of uniform quality and sensitiveness, and sold by a well-known London dealer at a price that would, he thought, compel photographers to use it. Further particulars would be published in the journals.

After some further remarks the proceedings terminated.

Talk in the Studio.

The Photographic Exhibition. — Our readers should remember that the forthcoming exhibition of the Photographic Society opens on the 9th of November, at seven in the evening. All contributions should be forwarded to No. 9, Conduit Street, addressed to the Secretary of the Photographic Society, a week previous.

Mechanical Printing.—Goupil and Co., of Paris, are using Mr. Woodbury's process extensively, and the *Stationer* says that they have introduced the Albert-type process for colour printing, with, it is stated, marked success.

Professor Henry Morton, of Philadelphia, whose excellent account of the successful eclipse expedition we recently published, has been elected to the newly-created Professorship of Mechanics in the University of Pennsylvania.

Photography and the Byron Slander.—The *Stationer*, speaking of enterprize in photography, mentions the promptness and resource of the Stereoscopic Company in connection with Mrs. Stowe's nasty and unnecessary story. It says:—"No matter whether the celebrities be living or dead, they are generally successful in procuring the portraits. The Byron-Stowe controversy had scarcely become a topic of conversation ere Mr. Nottage, the manager of the company, was ready with cartes-de-visite of all the notable personages referred to therein, the only exception being Lord Byron's half-sister. The portrait of Mrs. Stowe is admirable, while the remainder of the series are photographed from pictures which, at the time they were executed, were pronounced good. That of Lord Byron, by Sanders, is considered the most authentic, and represents the poet in a *negligé* costume, his countenance expressing melancholy and cynicism. Lady Noel Byron, copied from Newton's picture, indicates a robust prude, while the small compressed mouth evinces a decision of character which forms a marked contrast to the delicate contour of the Countess Guiccioli, whose likeness is copied from Brockenden's portrait. The last of the series, painted by F. Stone, is 'Ada, sole daughter of my heart and house,' a chubby-faced girl, bearing a resemblance to the mother."

Alkaline Development for Dry Plates.—Mr. W. H. Davie, in a contemporary, states that after an exhaustive series of trials with alkaline carbonates and with liquor ammonia, he has come to the conclusion that carbonate of soda is best in alkaline development, and yields the best and most trustworthy result, rarely rendering the use of a bromide necessary to prevent fog. In an experiment he describes, in which three portions of the same plate were developed separately with different solutions, plain pyro brought out a perfect image slowly; pyro with carbonate of soda, the same result rapidly; and pyro with ammonia, a foggy, wretched image.

Pre-Photographic Portraiture.—In his recent address before the Boston Photographic Convention, Prof. Towler gave an amusing sketch of the cheap portraiture which preceded the advent and popularization of photography. Some of the black profilists became photographers, and some who finished the silhouette with bronze, or sketched the more ambitious pencil backgrounds to the full-length figures, became photographic colourists. Photography thus gave better employment to those whose occupation it destroyed. Prof. Towler says:—"Thirty years ago profiles or silhouttes were taken by means of what is called a pentagraph, which, in its simplest form, consists of a long pole or rod moving on a universal joint, which allowed the pole to be rotated vertically, horizontally—in fact, through all the angles comprehended between those two planes. On the longer end of the rod a strong steel darning-needle was fixed; into the shorter a blacklead pencil was inserted. The cardboard to receive the picture was attached to a flat piece of wood suspended on hinges from above, and resting by gravity against the point of the pencil as it moved or rotated, whilst the steel needle was carried by the operator around the contour of the sitter, beginning on the crown of the head, passing gently over and beneath the curls, along the forehead, over the ciliary ridge, in contact with the ridges and declivities of the nose, carefully over the lips and their cherry surfaces (this was the *pour asinorum*, over which, if the luckless operator once succeeded without interruption, he might regard himself an artist of the first water), finally along the chin and delicate neck, and over the panting chest to the waist. The swinging board, that showed the outline so far traced, was here raised, whilst the needle was quickly returned to its original position on the crown of the head. Again the draughting-board was allowed to fall on the point of the pencil, and the operator proceeded with the needle backwards over the homologue of the modern chignon, and along the neck and shoulders to the posterior part of the waist. *Voila tout!* that's all. Excepting when the cardboard was removed from the swinging-back, the artist had to close the circuit by joining the back of the waist with the front, according to the rules of art, presenting a graceful curve like a fish-hook. This operation corresponded to posing and exposing in photography, and was wont to occupy about the same length of time, if the fair sitter or the country lout did not happen to burst out into an ungovernable laugh or titter when the needle crossed the lips. The next operation consisted in filling the whole surface within the pencil tracing with a uniform body of indian-ink; and when this was dry the model had to sit before the artist in due artistic style (for the artist never failed to assume all the supposed airs of genius) in order that he might sketch upon the black figure ears, eyelashes, ringlets, ear-rings, lace, and drapery in their appropriate positions. These were then worked in with a darker ink rubbed up with gum-water, which heightened the contrast. Touches of gold on the pendants from the ears and on the breast-pins were extras, and demanded an extra price. This operation corresponded to development. To give greater dignity to the proceedings, the sitter was seldom allowed to inspect the work at this stage, but was requested to call the following day at a given hour, stating that the silhouette had to undergo retouching by a certain Monsieur—that is, a French artist in the employ of the establishment, who was so overpowered with work that he never left his private room. The following day the sitter received the likeness, and in general was enchanted with it. People were not so fastidious then as now. Such was the mode of taking pictures for the people previous to the year 1839. Silhouettes were also cut out of black paper with a pair of scissors; these were quickly made, but were inferior to those made with the photograph, and consequently they seldom fetched so high a price. Many examples of the delectable silhouettes are still in existence. I found one the other day that had been cut out in the tunnel under the

Thames; it is truly a curiosity, and, as curiosities, I would suggest that a number of such profiles be collected and exhibited at our next meeting, side by side with specimens of modern photography. Comparisons of what we were with what we are present useful instruction. Limiting our considerations to photography alone we may, with legitimate authority, assert that in no epoch in the world's history, of equal duration, has the advance of any art and science, from embryo to maturity or apparent perfection, been so marked as the art and science of photography."

To Correspondents.

E. D. Lyon.—As a rule, pictures should be framed for exhibition, but copies sent unframed will be placed on the walls with drawing pins. They of course run some slight risk of injury. They should be sent addressed to the Secretary of the Photographic Society, and delivered, carriage paid, at the Architectural Gallery, 9, Conduit Street, Regent Street, a week before the meeting, which is on the 9th of November. We should think the 4th would be the latest day, as it is intended to number and catalogue the prints in the Journal, in accordance with our recent suggestion. The number which may be sent by each contributor is not limited.

W. A.—Cardboard may be made incombustible by treatment with a strong solution of alum, or of tungstate of soda. About an ounce of the salt will serve. The cardboard should be rolled after treatment, or it will look rough. By incombustibility, produced in fabrics by chemical means, you must not understand incapability of being destroyed by fire. The treatment destroys the tendency of a fabric to burst into a flame; it merely smoulders away when set on fire. 2. Either of the lenses you mention is suitable for groups and architecture. The rapid rectilinear is, however, not so rapid as the D series. 3. The development is under more control when the solution is poured on the plate. Dipping has advantages under certain circumstances, but would not be chosen, as a rule, where pouring was equally available. In case of dipping, the plate should be left in the solution until development is complete. No definite statement can be made of the number of plates which may be developed satisfactorily in one bath, as so much depends on the size of plate, quantity of solution, strength of solution, &c. The solution becomes somewhat exhausted by the dipping of each plate, and acid is liberated. Observation and experience alone can determine the point.

E. D.—Thanks for the paragraph. We had seen it last week; but we refrained from publishing an account of a *fracas* between two gentlemen connected with the profession, which both doubtless regret, and is better forgotten.

A Subscriber.—Insufficient density may be due to a variety of causes: the use of a collodion too newly iodized, or with too little iodide, or with too little pyroxyline; the use of too weak a nitrate bath, imperfect lighting, unsuitable developer, and some other causes will produce thin negatives. One of the simplest remedies is the addition of a little gelatine to the developer, which will tend to increase density. The use of a riper collodion will also probably help you.

Anxious.—Both would serve, but we should prefer No. 1 for landscape purposes. 2. The D lens would be quicker, and, stopped down, would answer very well; but we are not sure that it would serve quite as well for pure landscape. 3. The toning bath recommended for the Obernetter paper will keep. 4. With almost any toning bath one grain of chloride of gold will tone one sheet of paper; with some toning baths and careful use much more may be toned with one grain of gold. 5. The lime bath you have tried has had a great excess of chloride of lime, or has been used much too soon. Ordinarily, it should be made several days before use, and if wanted for early use should be made with boiling water, and then left standing in an open vessel for a few hours. The lime bath made with one grain of chloride of gold and one grain of chloride of lime in five ounces of water, and then kept until it is ripe, generally gives fine black tones. But you must bear in mind that to get good black tones a vigorous negative, which will permit a deep deposit of silver in the blacks of the picture, is imperative. 6. A negative should be thoroughly washed after intensifying and before fixing, otherwise the hypo may be decomposed, and may cause the black spots you describe. As a rule, there is no need to discard the negative fixing bath so long as it will remove the iodide from the film. 7. The effect of increasing the proportion of bromide in collodion is, within certain limits, to increase sensitiveness and to destroy excessive contrasts, giving softness and harmony. It also conduces to harmony, removing tendency to comets and fog.

A. B. C.—A reflector will undoubtedly increase the light considerably. If you use oil with a little camphor, you must avoid the use of very dense transparencies. The oxycalcium light will, of course, give you more light than oil.

C. Mevius (Rennes).—Where large numbers are required, we have a high opinion of the Woodbury process; but we do not think that it is applicable—at least, at present—to the ordinary business of portraiture when half-a-dozen or dozen copies only are required. For small numbers, the carbon process is undoubtedly preferable. We quite endorse your opinion that the impossibility of *ensuring* permanence in silver prints has been a most serious drawback to the success of photography. The copy required has been sent. We will look into the matter, and discover, if possible, the cause of the omission.

W. May, of Devonport, writes, in relation to our notice of the medal awarded to Mr. Brookes at the Devonport Fine Art Exhibition, that all the other exhibitors were amateurs, and that not one of the Devonport professional photographers exhibited. That was a fault for which they were to blame, and should not be urged in detraction of Mr. Brookes' merit.

H. S.—The fullest information on the subject of photo-lithography which has been published will be found in our pages. The articles by Lieut. Waterhouse in our last volume are minute and trustworthy; and an article in our Year-Book for 1867, by Mr. Butter, who is the practical photo-lithographer at the Royal Arsenal, is thoroughly practical. Photo-lithography is worked for reproduction, we believe, in several establishments in London: Mr. Ayling's, of Oxford Street, is one; at the Indian Museum, by Mr. Griggs, another. A clean, vigorous, dense negative is necessary, and a lithographic press is, of course, necessary for the printing.

Filie.—To enamel the surface of photographs, coat a clean piece of plate glass with tough, plain collodion (that you mention will answer very well). When dry, coat with a warm solution of gelatine, one ounce in twelve of water. When set, and nearly dry, place the print (which must be wet) upon the gelatine surface. Then allow to dry, and remove from the glass. Minute instructions would occupy too much space to give in this column. You will find several articles on the subject in our Eighth Volume, and in our Year-Book for 1865.

G. Nicholson.—You will scarcely gain anything by using simple coal gas without oxygen. But we should recommend the argand burner as giving the most brilliant flame.

Geo. Smith.—We do not know of any work in which instructions for the albumen process are given. The practice has gone much out of use of late years; but you will find various articles in our back volumes. Very excellent results can doubtless be obtained by means of albumen, and with hot development the exposure need not be very long. The chief drawback is the extreme care necessary in the preparation of the plates. In the Photographic News, June 7th, 1861, a detailed account of M. Ferrier's albumen process is given, which will probably best serve your purpose.

G. Restall.—By all means send examples of the work to the exhibition.

R.—We saw the "History of Photography" to which you refer, and noted the *suggestio falsi*; but it is not worth notice. Most persons are familiar with the artful form of falsehood which assumes the air of candour, or even liberality. To

> "Damn with faint praise, assent with civil leer,
> And, without sneering, teach the rest to sneer,"

is the triumph of disingenuousness.

J. W. (Mossley).—The most important defect in the photograph enclosed is in the lighting. The light is too evenly diffused instead of coming from one source, so as to give definite light and shadow. The light appears to be a top front light, and this gives a flat effect to the faces, with somewhat heavy shadows under eyes, nose, mouth, chin, &c. You require less front light and more side light. There appears to have been a little fog also, apparently from a little white light having reached the sensitive plate. Neither of the faces is quite sharp, either from movement or imperfect focus.

Several Correspondents in our next.

Photographs Registered.

Mr. J. Milner, Halifax,
    Photograph of Dr. Livingstone and Family.
Mr. J. Curtis, Plymouth,
    Photograph of Bas-relief Border.
Mr. Taylor, Cannon Street, London,
    Four Photographs of the Hon. W. E. Gladstone.
Messrs. Lloyd and Jefferson, Southport,
    Photograph of Rev. A. McLaren.
Mr. Elsden, Hertford,
    Two Photographs of Brocket Hall.

THE PHOTOGRAPHIC NEWS.

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THE FORTHCOMING PHOTOGRAPHIC EXHIBITION.

On Tuesday, the ninth of November, at seven o'clock in the evening, the exhibition which inaugurates the new session of the Photographic Society will be opened to all concerned—by whom we mean members of the Society, the friends whom they may desire to introduce, and the exhibitors—and during the week which follows, the exhibition will be open to the public, who will be admitted freely on the presentation of their cards, or signing their names in the visitor's book.

On the two previous occasions when an exhibition has been held under similar circumstances, the contributors have been requested to send in their pictures the day previous to the opening. The project having been in the first instance of a somewhat impromptu and altogether temporary character, the display being contemplated for a single night only, the delivery one day previously was considered sufficient for all the arrangements intended. As the exhibition of the first year far exceeded in extent and excellence the most sanguine anticipations of those who projected it, and as last year's exhibition was still more extended and excellent, it has been resolved to aim at a little more formal and satisfactory arrangement. We are glad to say that our suggestion of making the pages of the Society's Journal available as a catalogue of the pictures exhibited has been adopted, and a permanent record will thus be secured, which cannot fail to be of interest, alike to readers and exhibitors, and a catalogue for immediate reference of great convenience to all concerned is also obtained.

To give this record any value, the pictures should be sent in a week before the exhibition; they should be addressed to the Secretary of the Photographic Society, Architectural Gallery, No. 9, Conduit Street, Regent Street, carriage paid and should arrive on the second of November. If they arrive more than a day or two later than this, the aim of securing a complete catalogue must be defeated, as arranging and numbering the pictures themselves must precede the arrangement of the list for the printer, and this must be done in time to secure the issue of the *Journal* on the ninth instead of the fifteenth, as usual. We urge this point upon the attention of our readers, and as just four days are available after the majority of our readers receive this copy of the Photographic News, the time for prompt action will then have arrived.

In connection with each consignment of pictures, a letter should be addressed to the Secretary, advising him of the despatch, and furnishing him with a list of the pictures, their titles, and any other particulars it may be desirable to add. If this be carefully and systematically done, it will materially lighten the duties of the Secretary. If each exhibitor places the title of his picture and his name neatly but legibly on the margin he will add much to the interest of the exhibition.

Various suggestions have reached us in relation to the desirableness of appending particulars of process, lens, exposure, &c., to each picture, either on the margin or in the catalogue, and an intending "Exhibitor" in our present issue offers a vehement protest against any such practice, urging that the display should be regarded as an exhibition of works of art, and expressing a conviction that a reference to the mechanical details of process and apparatus would be almost as much out of place as a statement of pigments, pencils, and canvas employed would be on one of Sir Edwin Landseer's pictures in the Royal Academy. There is much to be said on both sides of the question. Photographers protest against the common idea that their works are mechanical productions, and claim for them the rank of works of art; and yet the first enquiries in relation to any good result are, "By what process was it produced? By what lens? Whose collodion was employed? What developer? Whose paper, and by which toning bath?" Surely nothing could so thoroughly impress a looker-on with the conviction that the photographer felt his process to be simply mechanical—a thing of apparatus and chemicals—than on hearing such questions as these made, as they often are, with the most earnest eagerness. Some thousands of the public interested in the progress of photography as a branch of science and art will probably see this exhibition, and amongst these many will be interested only in the pictorial qualities of the results, and few things could be more damaging to the art or more offensive to the observer, whilst the latter is admiring an expressive face charmingly rendered, or a landscape which nature and the artist have combined to make a true picture, than to have the intimation obtruded that it is the product of lenses and chemicals.

On the other hand, it will be said, with much justice, that photography is, after all, much more dependent on appliances than painting and other plastic arts; that however great the skill of the artist, there are certain elements of excellence in a photograph which are essentially due to process and apparatus; and that a photographic exhibition should be instructive as well as pleasing. "However gratifying to me," says one, "it may be to learn, from examining his pictures, that Jones is a capable artist, it is much more important to me to learn by what lens that peculiar depth of definition is obtained, or that sufficiency of angle which makes his photograph a whole picture instead of a bit of one, is embraced, and that without distortion; because the knowledge that Jones is clever does not enable me to improve my pictures, whilst a knowledge of the lens which secures given important qualities places these qualities within my reach." Another adds: "I have been working the tannin process, and its uncertainties have worried me almost into a resolve to abandon photography. If the singular uniformity of excellence which distinguishes the collodio-albumen results, or the rare delicacy and beauty of gum-gallic process, are attainable, I shall certainly try one or both before selling my apparatus." These and many more arguments are readily available on the side of those who seek instruction at exhibitions.

A simple compromise may easily remove all difficulties. Let the exhibitors take care to avoid obtruding all particulars of process or apparatus on the margins of pictures. The name of the exhibitor, and title of his picture legibly but not obtrusively written, are desirable; nothing more on the picture itself. For the catalogue all particulars may with propriety be supplied, and in fuller detail than could by possibility be given on the margin. In the columns of the journal forming the catalogue any fullness of detail in this respect will be instructive and desirable, and, if sent to the Secretary, it will, we doubt not, be properly dealt with.

We conclude by urging promptness, and also urging all our readers, whether members or not, to send anything which will tend to add to the interest of an annual exhibition of photographs.

PHOTOGRAPHY AND LIBEL.

A new form of danger, it appears, menaces the photographer: he may be made the instrument of perpetrating a libel. We find in the *Pall Mall Gazette* a paragraph from which it appears that a libel in the form of a photograph actually has been issued. The paragraph runs as follows:—

"At the Wandsworth Police Court, Edward Dercon, of York Road, Battersea, was charged with publishing a libel on Mr. James Forrester, in the form of a photograph. The picture was handed to the magistrate. It was a likeness of the complainant, who was an elderly man, and a nurse who had a child on each arm. A witness who was questioned as to the impression produced on his mind on looking at the photograph, said that it was that the children belonged to the complainant. It was stated that the photographs had been circulated very widely, but that since these proceedings had been taken the copies had all been bought up. The complainant was the only witness who could swear to having seen them in the defendant's window, and Mr. Dayman held that this was not sufficient evidence of publication, although he had no doubt that the photograph was a libel, and dismissed the summons. He refused to allow costs."

How a photograph of the complainant in conjunction with the objectionable children and nurse was obtained without his consent or knowledge is not stated, and we are led to the conjecture that it was probably a photographic copy of a drawing. Whether it was obtained by copying or combined printing does not appear a matter of importance. The photographer is chiefly concerned to learn that the photograph was pronounced by the magistrate to be undoubtedly a libel, and, but for insufficient evidence of publication, would doubtless have been followed by a penalty. In this case the complainant appears to have proceeded in a criminal court, and conviction would have been followed by imprisonment. The more common form of action for libel is in a civil court, where a verdict generally secures damages.

Our especial object in calling attention to the matter is to point out to the photographer that the issue of a portrait of any one calculated to injure or annoy him, and bring him into contempt or disrepute, may constitute a libel. Actions for libel are so generally instituted in consequence of calumnious statements, that the impression widely prevails that a libel consists only in the publication of such calumnies. The practice of caricature is so common, generally so harmless, and, as a rule, practised with such impunity, that few people associate the idea of libel with any form of pictorial representation. It should be remembered, however, that a picture may be a libel as easily as a paragraph. The gravamen of a libel is generally the malice involved: the intention to injure or annoy is, as a rule, necessary. If malice can be proved, there is little doubt of the libel. But even if malice be absent, if the injury be proved, conviction for libel often follows. Caricatures may be, and often are, produced, in which not a shade of malice is intended, and from which no injury can follow; the work requires, however, not only the pencil of a skilled artist, but the possession of a genial, large, kindly heart. The true humourist, using either pen or pencil, is rarely ill-natured. Grotesque portraiture produced by petty minds and incapable hands is always vulgar, and generally offensive. Such portraiture, whether produced by camera or pencil, has been pronounced, by good legal authority, libellous, although the law is so rarely invoked to repress it.

Photographers should beware of being induced at any time, either by combination printing, or reproducing, or by any other means, to aid in the issue of portraits which may be offensive, and in reference to which the indifference or good-nature of the persons injured may be the only barrier to an action for libel, which may issue in heavy damages, or, if the culprit be not worth powder and shot, may acquaint him with the amenities of prison discipline.

Foreign Miscellanea.

The societies of Berlin, Vienna, and Paris are enjoying their autumnal recess; that of Marseilles resumed its sittings last month, after the expiration of its usual vacation.

Diapositives on collodion, or transparent pictures, may be successfully toned with chloride of platinum, by which means they are made to assume a beautiful violet tone. The picture is strengthened with pyrogallic acid, fixed with hyposulphite of soda, and well washed; equal proportions of the two liquids compounded as below are then poured over it:—

A.—	Chloride of platinum ...	1 gramme
	Water	100 grammes
B.—	Ferricyanide of potassium...	10 ,,
	Water	300 ,,

M. Lucy Fossarieu's book on photo-enamels has just appeared in Paris.

A pretty example of Rembrandt effect in photography illustrates the *Photographische Mittheilungen* of this month; it is a female head, executed with much taste by M. Ernst Milster, of Berlin.

The North German frigate "Hertha," which has just been despatched by government for a voyage round the world, carries with it a complete outfit of photographic apparatus for the purpose of securing records of any interesting localities or points upon which information would be valuable. The arrangements have been entrusted to one of the petty officers who has received special instruction in his duties.

Dr. Monkhoven's new artificial light is said to be very effective. During a recent experimental employment of it, an enlargement was produced at nine o'clock in the evening in sixty to eighty seconds, which was afterwards successfully developed in a period of ten minutes. The learned doctor intends to make known the precise character of the light in a short time, and to describe the nature of the apparatus necessary for its employment.

M. Remelé has published a work upon landscape photography by the wet process. The manual is said to be of an exceedingly practical nature, and the information afforded is such as is the result of personal experience. It is illustrated by means of photographs and wood-cuts, and is published by MM. R. Oppenheim and Co., of Berlin. The employment of a developer containing sulphate of copper is insisted upon by M. Remelé in landscape photography, as rendering the high lights with much more effect without prejudice to the deep shadows. Some time is required to appreciate its utility, but an intimate acquaintance with its capabilities will assure the operator of its value. The formula recommended for developers is as follows:—

Sulphate of iron	12 grammes
Sulphate of copper	3 ,,
Glacial acetic acid	2 ,,
Absolute alcohol	20 ,,
Water	240 ,,

Instead of the twelve grammes of sulphate of iron, fourteen of sulphate of iron and ammonium may be substituted.

The members of the new Berlin Society for the advancement of photography already number upwards of one hundred and fifty, of whom sixty-five are inhabitants of the capital.

A new varnish, yclept *Clarifat*, is announced by M. Oscar Cramer, of Vienna. The resulting appearance, when applied to photography, is stated to be precisely that afforded by a picture moistened with water. If the effect imparted is really as good as that exhibited by a moistened print, the varnish will be, without doubt, of valuable assistance to portrait photographers.

The *Correspondenz* promises its readers a *resumé* of the details and principles upon which are based the various photo-mechanical printing processes at present competing for public favour.

A swindler, professing himself to be the brother of Dr. Monkhoven, has been making a raid in the Rheinish provinces, where many professional men have been duped by him; he offers secret processes for sale.

MM. H. Oidtmann and Co., glass manufacturers, of Linnich, have received a silver medal at the Altona Industrial Exhibition, for the examples of pyro-photography exhibited by them. This method of photographing upon glass was recently described in our columns.

At a flower show recently held at Batavia, a gold medal was awarded to a M. Dietrich, for his excellent photographs of Indian plants, flowers, and fruits.

The Bavarian Government have granted an extension of the Woodbury photo-relief patent; it will now stand good until the 4th August, 1871.

Baths of hardened cardboard (*carton durci*) are advertised by a Paris firm as being light, indestructible, and economical. They are probably manufactured from a description of *papier maché*.

The *Bulletin de la Societe Francaise* of this month has nothing of novelty, containing, as it does, nothing but articles of foreign origin, all of which, with one exception, have been translated from the English.

M. L. G. Kleffel is the editor of *Licht*, the new journal of the Berlin Society. The publication has now reached its seventh number.

The Exhibition of the French Photographic Society, held in the *Palais de l'Industrie*, closes on the 31st inst.; it has remained opened continuously for a period of six months.

M. St. Claire Deville has presented to the Academy of Sciences an essay by M. Mascart, embodying a series of investigations upon the ultra-violet spectrum.

Dr. Moitessier's work, entitled "Photography as an Aid to Microscopical Research," has been translated into German by Dr. Benecke, of Konigsberg, who has re-edited and enlarged its contents.

PRACTICAL HINTS ON RETOUCHING NEGATIVES.

BY G. CROUGHTON.—CHAPTER I.

At one time (and that not so long ago) it would have been necessary to have entered into a long defence of the legitimacy of retouching upon the negative; but now things are different. Photographers are beginning to own the importance of the subject; and I feel that no apology is needed from me for taking up space in the News with these hints. The causes that have led to this effect upon English photographers are many. First and foremost, I think I may place the controversy which was raised in relation to Mons. Salomon's portraits exhibited in London some two years since. All who saw them were unanimous as to their beauty; but anything but unanimity prevailed as to the means employed to produce the effects so admired. It is now generally believed that the modelling and texture, which were the distinguishing characteristics of the faces of Mons. Salomon's portraits, were the results of retouching upon the negatives. Of course I am here only speaking of the rendering of the face. Of the composition, so thoroughly artistic in its smallest detail, the grand chiaroscuro, the easy and natural posing—in fact, the *all* that made the gifted Frenchman's portraits so far above anything we have seen before—it is not my province to speak. They have received their deserts at abler hands than mine. But the faces were undoubtedly retouched, and it was the discussion as to whether they were or not that first opened the eyes of English photographers to the improvement that could be effected by judicious retouching. Another cause of the revival of the interest in this subject has been the publication of a series of carte and cabinet portraits of royalty, eminent persons, actresses, &c., by Continental photographers, all of which bore the evidence of more or less retouching; and I may mention, in particular, some large heads of ladies upon cartes by Fritz Luckhardt which were most elaborately retouched.

It is quite certain that while the majority of English photographers let the matter drop with the observation that retouching was not photography, on the Continent it has been taken up and carried out to such an extent that it has become patent to the general public, and we have English people getting photographed in Paris because, as it was remarked in my hearing a short time since by a lady, when showing her portrait taken in Paris, they make their faces so smooth, round, and nice. But I think now that English photographers are becoming convinced that to keep pace with their Continental brethren they must retouch their negatives.

There are, however, still a few who adhere to the opinion that photography is the most truthful representative of nature, and that a clean, well-manipulated negative is incapable of being improved by any after-touching whatever. I feel assured, however, that if they could see the result from a negative retouched, and could compare it with a print from the same negative before touching, the most hardened sceptic of them all could not remain blind to the advantages of retouching, even on the best of negatives. There are also a few who still maintain that retouching is not legitimate, and, while owning the superiority of the retouched work, maintain that it is not photography, and therefore they will have nothing to do with it. The answer I once heard from a sitter to a long argument of this description from the photographer will be found, I think, to bear out what I say. When told that it was not photography pure and simple, but the work of hand and pencil, the sitter (a lady) replied, "I do not care how it is done; it is a photograph, for I sat for it, as I sat for those you have taken for me; and if the man has touched them up afterwards, as you say, all I know is that he has made a much better likeness than I ever had before." I can only repeat the same argument: if, by retouching the negative, the resulting print is made better than it would have been had the negative been untouched—if, in addition to removing accidental defects, such as freckles, sun-burns, &c., you can give more refinement to the picture, and also make it more like the sitter—then I maintain that not only is the process legitimate, but it is the duty of every one who values truth in his productions to resort to it. There are some, perhaps, who will think that I am claiming too much for retouching; but I think the Editor will bear me out when I say that not only has all that I claim for it been done, but a small amount of flattery has been given without the slightest characteristic of each individual portrait being lost

Let me now, by way of illustration, bring before my readers one or two sitters whose portraits rarely give satisfaction, by reason of there being something in their faces that photography renders untruly. First, we have a good-looking elderly gentleman from the country, the brilliant colour upon whose cheeks is distributed in lines or streaks, and sometimes in a perfect network: if his eyes happen to be blue, you have one of those sitters that few photographers like to see enter the studio. Let me ask any of my readers if the print from an untouched negative of such a sitter is true to nature? I myself most emphatically say that nothing could be more untrue than the dark lines and patches photography has placed upon the cheek instead of colour. Then, again, we all know how annoying freckles are, to the sitter as much as to the photographer; for how can we expect the *blonde* beauty to like her photograph if she is represented as if scarred with the smallpox? Or take another case, this time a young and good-looking lady, not exactly stout, but plump, her complexion pink and white, with deep colour upon the cheek just below the cheek bone, and her face just a trifle rounder than she likes to own to herself. Now I daresay some will be inclined to say, what is there in such a sitter for photography to exaggerate? I can only say (for this is not a suppositious case), the result was anything but satisfactory: the colour upon the cheek came out one tint deeper than the surrounding white part; the part of the cheek nearest the ear, having no colour, came forward instead of retiring, the face by that means being made to look broader than in nature; while the colour under the cheek bone came out like a shadow, not only making that too prominent, but giving the appearance of a hollow cheek. The result was a portrait not less offensive than untrue.

I must, however, close my illustrations by an allusion to that plague to all photographers, the old young lady, or, as *Punch* once put it, the lady of a certain (or, rather, uncertain) age. I suppose there are very few who cannot look back upon experience with more than one sitter of this description. The same tale is repeated by all. They have tried every photographer under the sun, and every one has failed to give satisfaction. This is the class of sitter that retouching can do the most for. The lady now under consideration is not quite old enough to be classed among the old maids, but still old enough for the slight lines upon the forehead (those threads that Old Time spins into wrinkles) to show pretty plainly that the cheeks are slightly hollow, and that tell-tale line at the corners of the mouth has taken a decided downward tendency. There is no need to multiply these examples of the large class of unsatisfactory sitters, but I will at once place these three negatives in the hands of the artist to be retouched.

Let us commence with number one. The only thing to be done to make that negative give a satisfactory print will be to level the streaks or patches with the surrounding parts. As I intend entering at length upon the means of doing so in another chapter, I shall say nothing about that here. Most likely the high lights will be wanting upon the nose and forehead; those put on, the negative is ready for printing, and the result is not only more perfect as a photograph, but is a much better likeness.

Passing over the freckles, we come to the negative of the lady with the broad face. There is more work here: in the first place the cheek must be worked over till the centre is more opaque than the part nearest the ear; then the dark under the cheek bone must be filled up, and the high lights all over the face strengthened, the object being to give such force to those parts of the negative which have come out too transparent by reason of the colour upon the cheek. This treatment will cause the features to take their proper places, and, by enabling the face to be printed darker, throw into shade the parts of the face nearest the ear that in the first print came too forward.

With the last class of sitter it is more difficult to deal, because to please you must resort to a little flattery. Beginning with the forehead, the lines must be filled up, but in doing so great care must be exercised not to alter the light and shade upon the forehead. Then the cheeks must be *almost* filled up, and the lines at the corners of the mouth softened and raised as much as possible; it is possible to take these lines away altogether, but by so doing you may alter the likeness, and that is to be avoided.

Now I would ask, if, by a small expenditure of time and trouble, we can satisfy sitters that cannot be done justice to by photography alone, it is not the height of folly to neglect to avail ourselves of *any* means that will both improve the pictures and give satisfaction to our customers?

Having endeavoured to explain briefly in this chapter what is to be done, I will in my next describe how it is to be done. (*To be continued.*)

APPARATUS FOR HOT CLIMATES.

BY W. L. NOVERRE.

WATER-TIGHT DIPPING BATHS.

The dipping-bath cases, as usually made, are too small, and two serious inconveniences arise therefrom:—Firstly, that from the wood not being thoroughly seasoned, or getting wet from the solution slopping over or leaking out at the top, as will sometimes happen through carelessness or accident, the front or back warps, and the bath gets cracked; secondly, that in case of the bath being accidentally broken, the one obtained to supply its place will, in five cases out of ten, not fit into the case. When the bath has to be obtained from a great distance—sometimes hundreds of miles—the annoyance this causes may be imagined. All bath cases should be made about half-an inch larger each way than the bath, the space being filled up with folded paper. The inside should be well varnished with lac varnish, which is not usually done. This protects the wood and brass bindings and screws from the solution should it chance to get slopped over into the case. The wood should be sufficiently thick, and should be brass-bound, and screwed if intended for travelling, as an accident on a journey is extremely awkward.

The india-rubber tops are a constant source of annoyance. Vulcanized india-rubber is not considered safe, coming, as it does, in contact with the bath solution. This may be overcome by cementing a piece of sheet gutta-percha over the face of the rubber. Gutta-percha, however, is so quickly destroyed in a hot climate as to be useless in any shape. The pure india-rubber generally used is soft, and sticks to the top of the bath; nor does it retain the solution when the bath is tilted or turned over, for if it be screwed down very tight the bath will cut almost through the rubber, and will be so firmly glued to it that nothing will separate them. This troublesome adhesion occurs in hot weather, even with light screwing, especially when the bath is put aside empty, and is a frequent trouble. It might, I think, be partially overcome by polishing the top edges of the bath instead of having them simply ground, as is usually done; and I have prevented it by placing a strip of stiff, smooth, well-sized paper between the bath top and bath when I have required to put aside the bath for travelling; but even with this arrangement I have known the india-rubber ooze through the paper. In very hot weather adhesion of the top to the bath has, however, been prevented. As an instance of sticking the following may be mentioned:—

I once got out a water-tight dipping-bath from a manufacturer, one of those who profess to make apparatus for tropical climates. I used the bath for some time, and one day I tried to take it out of the case, but nothing would move it. At last I unscrewed the front, and then I discovered the cause of my grief in the shape of a strip of india-rubber placed in the bottom of the case, and to which the glass bath had become tightly glued.

I never attempt to travel with the solution in the baths. The best plan is to carry them in bottles whenever there is a chance of the bath being tilted or much shaken, or, in fact, whenever it is likely to be out of sight.

The india-rubber tops get worse and worse the older they get, becoming, at last, quite sticky in a temperature of 80° Fah. After two or three years the india-rubber should be separated, and a new piece substituted. Whether the silver solution hastens the destruction or not I do not know, but I rather suspect it does. Why do not the "manufacturers of photographic apparatus for hot climates" invent us a water-tight bath we can use and depend upon?

Central Provinces, India.

THE ENAMEL PROCESS WITH PERCHLORIDE OF IRON.

The growing interest which has been manifested of late in processes of photographic enamelling induces us to reproduce some extracts from an article by Dr. Anthony, which appeared in our pages some years ago, in which he gives a graphic account of M. Poitevin's perchloride of iron process, and of the operations which he witnessed in Paris as practised by M. Gobert, of the Bank of France, by whom the process was employed for carbon printing.

It will be seen that Dr. Anthony holds the impression that the superb enamels of Lafon de Camarsac are produced by this process; and we may add that we learn from a French journal that the enamels of Leroche—which, as exhibited at the International Exhibition of 1867 in Paris, seemed to closely resemble and fully equal those of Lafon de Camarsac—are really produced by the process. Dr. Anthony says:—

"The principle of Poitevin's process is this: that a material used to coat the plate, and dried in the dark, will, when exposed under a negative, become "sticky" or "tacky" in those parts acted upon by the light; so that when fine particles of carbon, &c., are dusted on to the plate, they become attached to the sticky portions *only* of the plate, and so build up an image."

We may here call attention to the fact that this is the direct converse of Joubert's method, in which the protected parts are sticky, and the exposed parts hard and dry; a transparent positive being necessary, therefore, as the *cliche.* We now resume Dr. Anthony's description:—

"The process itself is to take a piece of very finely ground glass (which may serve again and again), to clean it with moderate care, to coat it in the dark room with a solution of perchloride of iron and tartaric acid, pouring on as would be done with collodion, and running the excess off into the bottle, and then setting the plate on its edge to let it dry in the dark. In this condition the plate resembles, in all but colour, an ordinary dry collodion or albumen plate, and the printing is done by contact in the usual manner; but practice only can teach the time necessary for exposure under the negative. When the exposed plate is examined in the dark room, and especially after breathing on it for a few seconds, it will be found that where the light has reached it through the negative the surface has become 'sticky' or 'tacky' in proportion to the quantity of light which has impinged upon it. If, now, any light, impalpable, inert powder—such as carbon, plumbago, or finely-ground and sifted enamel colours—is dusted into the plate, and gently rubbed on its surface by the aid of a fine brush, the particles will gradually attach themselves to the sticky portions of the plate, and, after one or two dustings and 'rubbings-in,' a puff of the breath will disperse the loose dust, and the picture will be seen full of detail. It may be mentioned here that if the plate has been over-exposed it will 'take' the powder too rapidly, and the resulting picture will be overloaded and heavy; if under-exposed, the effect will be a want of detail. To transfer this picture to paper, some plain collodion is poured over the plate, allowed to set, well washed at the tap, and then with water acidulated with hydrochloric acid, which has the property of dissolving the perchloride coating unacted on by light, *through the collodion film,* while at the same time it prevents the adherence of the collodion to the glass, so that when the superabundance of this acid solution is washed off, the film which holds the picture is ready for transfer to paper or porcelain.

"The transfer to paper is effected by brushing over any white or tinted paper with a very weak solution of gelatine or any gummy substance; this, when moistened just before using, and laid face downwards upon the film, and pressed upon it by means of some blotting-paper, will adhere so firmly, that when it has been allowed to dry, collodion and image seem to be incorporated with the paper. But it is evident that the image so transferred is reversed, and it may be important (as in the reproduction of printed matter) to avoid this reversed position, and then a slight modification is adopted in the mode of transfer as follows:—When the plate has been washed free from the acid and drained, a piece of ordinary white paper, cut slightly smaller than the dimensions of the plate, is laid upon the film, and then the edges of the collodion around it are delicately turned up and reversed over the back of the paper, and the film can be thus lifted off the plate and laid down on the gelatinized or gummed paper, to which a little pressure causes it to adhere.

"In the first case, the carbon image, being *on* the collodion film when it was transferred to paper, would need to be protected by a layer of copal varnish; in the second case, where the image is not reversed, no protection would be wanted, as the image would be next the paper, and so would be protected by the collodion film.

"M. Gobert, who, as I observed, has practised this mode of printing extensively, has communicated an article on the subject to the *Bulletin,* in which he says that he finds the perchloride of iron of commerce to be very uncertain in its composition, and that he prefers to prepare it himself in the following manner:—He takes ordinary sulphate of iron, and treats it with ordinary commercial nitric acid so as to form a sulphate of the peroxide of iron; this peroxide of iron he precipitates by ammonia.

"*To prepare the sensitive fluid,* he says:—'I dissolve two drachms and twelve grains of this peroxide of iron in as much hydrochloric acid as will make a neutral solution (though excess of acid does not seem to make any difference). I dilute with water to the bulk of three and a-half ounces, and filter, and then add two drachms and twelve grains of tartaric acid.'

"Such is the material, and such is the process as I saw it easily manipulated, and apparently taking up little more time in the practice than I have done in the description; and I feel that photographers are greatly indebted both to M. Poitevin and M. Gobert for the liberality and courtesy with which they have made known all the details of the process, and pointed out its capabilities for the production of pictures in enamel—a strong contrast to the reticence of M. De Camarsac. I thought then, and I think now, that the principles on which this process depends are so certain, and the materials used are so cheap, that it promises to be of considerable value for decorative purposes in its simpler form; while there seems to be no reason why either that a transfer should not be made of the image built up in an enamel colour to the enamel plate, or else to porcelain, or that the enamel or porcelain plate should be directly coated with the sensitive fluid, and placed in a copying camera (as in the operation of making transparent positives on glass), the image, of course, being attainable of larger or smaller dimensions than the negative—no small advantage. This image, if rubbed with the powdered enamel colour, to be glazed in the furnace. There seems little reason to doubt that the carefully concealed process by which M. De Camarsac produces his exquisite enamels is some modification of this process—probably a slight one—and I shall be very glad to see the matter taken up and made available for the production of really unchanging impressions from the number of fine negatives we have in England, and whose detail is really much of it lost when printed on the ordinary albuminized paper. I dare say many will be very incredulous touching this assertion of loss of detail; but it is a fact. A few months ago I had occasion to send a negative portrait to Paris for M. De Camarsac to print on an enamel, and though I had already the very finest impressions which could be made on albuminized paper, yet these were very far excelled by the enamel, not only in the superior quality of the blacks and whites, but in the circumstance that the detail of the negative was *all* rendered by the enamel, much more than the best vision could make out in the paper proof. M. Poitevin has pointed out the application of this process to the production of enamels, and has himself made many experiments; but though M. Poitevin is an undoubted man of genius, he is by no means a good operator; I was going to say he is a slovenly one; at all events, his best enamels are far inferior to those of M. De Camarsac, as, though rendering all the details, they lack brightness, though even with that deficiency they bear a comparison with the work on porcelain I have seen by M. Obernetter's process. This tartrate of iron process is not, so far as I know, fettered by any patent, and the reason why it has not been taken up commercially lies probably in the fact that the details of the process itself have been so imperfectly known that the manipulation would seem to be invested with difficulties which really do not exist for a man of ordinary skill and energy."

THE APPLICATION OF PHOTOGRAPHY TO SURVEYING PURPOSES.

BY CAPTAIN STOTHERD, R.E.

*Instructor in Photography, &c., at the Military School of Engineering, Chatham.**

The attention of photographers has recently been much turned to the utilization of this very useful branch of art, and many excellent applications have been discovered, the practical results of which may be seen every day. There is, for example, the very beautiful process of the reduction of plans by photography from a large to any given smaller scale, by which the saving of time and labour is enormous, and the accuracy obtained far greater than that which would result from any mechanical mode of reduction. Again, there is the photo-lithographic process, and others besides, which it is unnecessary here to enumerate. Among the most recent applications of photography is the attempt to bring it to bear practically on field surveying, and by it to obtain data from which an actual survey may be plotted as from an ordinary field-book. This has been done in Austria with considerable success; and again in the Paris Exhibition of 1867, Mons. Auguste Chevallier, No. 1, Rue de Condé, Paris, exhibited a very neat and clever instrument, designed with the same object in view.

The rapidity and accuracy with which photography, as applied in this way, is capable of recording, in true relative position, the different objects composing any view falling within the focus of the lens of an instrument, render it highly probable that at no very distant day it may come into general use for military purposes, and that instruments (if not like that of Mons. Chevallier, on somewhat similar principles) may form part of the equipment of every army which takes the field; a description of it may, therefore, be interesting.

It consists of a stationary horizontal plate or table, supported on a tripod-stand, over which a movable plate is arranged to revolve, with a uniform motion, by the action of clock-work. This upper movable plate is provided with a prism or mirror, by which the image of an object in front of it is projected upon the stationary horizontal plate. By means of a simple arrangement fixed at the lower part of the tube, carrying the prism, the light can be effectually excluded at any point during the period of its rotation. As the upper plate revolves, the image of each object, as it passes in front of the prism, is projected on the lower or horizontal plate in true relative position; and if a sensitized glass be introduced in connection with this stationary horizontal plate, a panoramic view of all objects presented during a single revolution of the upper one is photographed thereon, each object being in truly mathematical relative position with all others in the same panoramic view, with reference to the central point on which the instrument revolves.

This central point at which the instrument is placed corresponds exactly with a trigonometrical station at which, in the ordinary operation of surveying, a round of angles is taken by a theodolite; and the panoramic view corresponds to a round of observations, which are, however, in Mons. Chevallier's arrangement, recorded in the form of a picture, round the circumference of a circle, described with the trigonometrical station as its centre, whereas in the ordinary mode of procedure they are represented by a series of bearings with reference to a given meridian, and recorded in the form of angles therefrom.

The opening in the upper plate, through which the image is projected upon the sensitized glass, is in the form of a slit, about one-third of an inch wide in the outer circumference, and gradually tapering towards the inner circle, bounding the exposed surface, its sides being in the direction of the radii drawn from the centre of revolution of the instrument. A simple arrangement covers this slit and excludes the image till the moment for exposure arrives, when it is opened by turning a mill-headed screw. The time of exposure is regulated by the rate of the clock-work, each object being presented in succession on the sensitized glass during the interval of time taken by the slit or opening to pass over the arc of the circle corresponding to it.

The image can be cut off at any point required during the revolution of the instrument by simply turning the mill-headed screw already mentioned, so as to cover the opening; and thus any portion of the panorama may be photographed at will, without completing the whole revolution. The mean of focusing is attached to the upright portion, and a small telescope in connection therewith gives the power of regulating it, so that a sharply defined image may be obtained. The image produced on the glass is a negative, which may itself be used in plotting the different points of the panorama on the plan, precisely in the same way that a round of angles is plotted by means of a circular protractor; when there is time, however, a print from this negative affords a more convenient medium for this purpose. In making a survey with this instrument, a base is measured, and panoramic views from its extremities, and from other points required, are taken; and the positions of the most defined objects being laid down by plotting on the plan, by means of the pictures obtained, the remaining detail is readily inserted by minor measurements, productions, and intersections. Mons. Jouart, Lieutenant of Artillery of the Imperial Guard, has published a very interesting and detailed account of this apparatus and of its use, from his own practical experience, as a surveying instrument, combining as it does considerable accuracy with rapidity in obtaining the necessary data for plotting. The record being self-acting, no error can arise from a mistaken entry of a bearing. If a series of views were taken from prominent points, a system of triangulation might be rapidly carried over any district of country, and on this triangulation the detail could be very readily built.

It would be very desirable to test this instrument practically, in order to obtain some idea of its working powers. As regards its disadvantages, which appear to be the necessity of carrying about a dark tent and certain photographic apparatus, and the employment of trained photographers, I would observe that, as a photographic equipment will probably form an appendage of every army that takes the field in modern warfare, the first objection is scarcely worth considering, provided the instrument itself can be made in a sufficiently portable form for transport. As regards the necessity for providing skilled photographers to work it, men with comparatively little previous knowledge will answer the purpose, if first-rate hands cannot be obtained, because the pictures to be produced are not required to be kept as works of art, but are simply to be used for plotting purposes, for which such great perfection is not necessary. Mons. Jouart states that some of the negatives used by him in his surveys were taken by men who had had only three or four days' practice in photography.

In addition to the mode of working this instrument already described, it may be used without clock-work by simply arranging it to remain stationary at certain given points round the circumference of the circle of the panoramic view to be taken, the distance between the stationary points at which the apparatus is fixed for each view being regulated by the space on the sensitized glass on which the image of the view to be taken will be cast in proper focus. The effect of this process is to produce a series of views forming a panorama, and, in point of fact, giving a very similar result for working purposes to that obtained with the clock-work, the only difference being that in the one case a series of views is produced, whereas in the other the result is one continuous picture, extending without a break completely round the circle.

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* From the Professional Papers of the Royal Engineers.

When no clock-work is used, the arrangements for exposing the sensitized glass are somewhat different from those required with the continuous action as already described, a broader space being exposed for a certain definite interval of time, and then the apparatus passed on to the next space, which is in its turn exposed, and so on till a complete circle, or portion of a circle, has been photographed. The instrument exhibited in Paris at the International Exhibition excited a great deal of interest; it is a comparatively new idea, and it is to be hoped that it will prove as useful as its inventor anticipates.

ON PHOTOGRAPHING IN DARK LOCALITIES BY MEANS OF REFLECTED SUNLIGHT.

BY DR. H. VOGEL.*

Communicated from the Photographic Studio of the Royal Industrial College of Berlin.

The report upon the recent expedition to Egypt has called to mind my successful application of the employment of reflected sunlight for photographing the dark or dimly-lighted temples and graves in that country. Compared with the employment of artificial light (magnesium, &c.) this method of illumination has many advantages; as, for instance, its freedom from expense and injurious effects, and the fact that apparatus of a complicated nature is unnecessary.

At a later period M. Hammerschmidt adopted successfully my proposal in reproducing pictures of the interior of the catacombs in Jerusalem.

In all the above instances simple reflected light—that is to say, sunlight thrown upon the object by means of a single mirror—was sufficient; and in order to avoid any spots of intense light, the mirror was continually moved, so that the bundle of rays was reflected successively over the whole surface to be reproduced. In many cases, however, it is impossible to illuminate by this means—as, for instance, when objects are placed in a retired position—and in these instances a second mirror is necessary to reflect the rays thrown from the first. It was this arrangement that I recently availed myself of in the Industrial College in taking a picture of a gas-engine which stood in a dark corner of a workshop, and of which a view was desired of either side. A mirror placed on the first floor, and moved during exposure only to such a degree as would ensure the reflection of the greatest amount of light, threw a bundle of rays into the dimly-lighted workshop, and these were caught up by a second mirror continually moved by hand, and thus reflected upon the object to be illuminated. Dark portions of the object—such as iron wheels—were longer illuminated than the lighter parts, and the essential points again more than those of less consequence. The light appeared exceedingly brilliant in the dark workshop; so much so, indeed, that a short exposure only seemed to be necessary. This, however, was by no means the case. In the absence of a powerful portrait apparatus I employed an aplanatic lens, and used an aperture only so small as would render the more important parts of the machine sufficiently sharp—the third smallest stop, in fact. Under these circumstances, the necessary period of exposure was, on the 24th July, between three and four o'clock in the afternoon, as much as from eight to nine minutes. From this it will be seen that an important quantity of the light is lost in the operation of reflecting, for with direct sunlight the exposure, with the same apparatus, would not have amounted to more than twenty-five seconds.

These data may be useful in practice when similar work has to be undertaken, as they demonstrate clearly the extraordinarily variable power of sunlight, which, for example on the 21st December, at noon, does not appear more brilliant than at six o'clock in the evening on the 21st June.

QUALITIES OF NEGATIVES.

BY PROF. JOHN TOWLER, M.D.*

The instruction already communicated in reference to the preparation of the negative does not terminate here, for there are two distinct kinds of negatives, one from which prints are to be obtained by contact with paper, and the other not by contact, but by the intervention of the camera either on paper or glass. Such a negative we use for making solar camera enlargements or glass positives, the requisite qualities of the negatives being the same for both these kinds of work. The ordinary negative does not possess these qualities.

I will, therefore, first describe what the peculiar properties of such a negative are, and then how to make one.

In the first place, the film of collodion must be very thin and structureless, as it is sometimes termed—that is, the surface, when dry, must be perfectly smooth and free from lines, corrugations, and a species of network produced when the collodion is thick. As a general rule, five grains of pyroxyline to the ounce of the mixture of ether and alcohol will be quite abundant; less than this will generally suffice. Furthermore, I prefer using a mixture of ether and alcohol, in which the former predominates in the ratio of five ounces of ether to four of alcohol. This excess of ether, it is true, has a tendency to give a sort of structure, or at least to lessen the pulverulent form of the film, but it makes the collodion thinner and flow more easily; and if the plate be covered quickly with the collodion, and all excess of the latter be also quickly allowed to drain off, there will be no danger of producing an uneven surface on the film whilst it is setting. Secondly, the development must be stopped as soon as all detail has been obtained, and before the shades begin to thicken by any extra deposit. Consequently, intensification is altogether unnecessary. But the most important condition is to get full and complete detail everywhere, and to preserve the deepest shadows from being opaque. The rule I follow is this: I hold the negative up, and see if I can discern the foliage on trees, or the picture of a negative on the window-frame through the deepest shade. If I cannot do this, the negative is too opaque for the purpose.

Now, beginners are apt to get the idea that such a negative is a sort of ambrotype, or glass positive by reflection, and is easily prepared by giving a short exposure and development. As regards the length of the exposure, this idea is quite erroneous. On the contrary, the exposure must be longer than for an ordinary negative, in order that all the detail can be brought out easily, and before the shades become too opaque. The nitro-gelatine developer, containing two or three minims more of the nitro-gelatine per ounce of developer than is ordinarily used for common work, will produce an excellent result with the proper exposure. The development must in all cases be cut short before any fogging sets in. The moment the picture is all out, throw off the developer, wash the film, and fix the picture. There is but little fear of the negative being too thin, but the tendency is to make it too thick or opaque. If, however, it is too thin, you can then resort to a gentle intensification by adding a drop or two of the silver solution to the developer, or by flowing over the wet film a dilute solution of iodine. Wash the negative well, and dry it. The negative is next to worthless if it is full either of pinholes or dark particles. To avoid both, dilute the bath by the addition of four ounces of distilled water, filter, and then dissolve in it three drachms of nitrate of silver. Filter, also, the developer, and use filtered water (free from dust) for washing the negative.

It is not advisable to varnish negatives which are intended for the production of enlarged prints unless you can obtain a very fine sort of varnish which is entirely free from particles of every kind, for every particle, when magnified, is a blemish on the print.

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* *Photographische Mittheilungen.*

* *Philadelphia Photographer.*

ABOUT PATENTS.*

As much misconception exists among inventors respecting the protection of their inventions, we consider the following hints will be found acceptable. The object of the patent laws is to secure to the public the advantages to be derived from the discoveries of individuals, and the right of compensation to the latter for their time and labour. The patent laws do not protect an imperfect or incomplete invention, but operate only when such notions are reduced to practice, and embodied in distinct machines, or apparatus, or applied processes. Whoever is first known to perfect a machine and render it capable of *useful* operations, is entitled to a patent, even if others have endeavoured to put it in practice, and though all the component parts are known under different combinations or used for different purposes. If a patentee claims more than he has invented, as far as the invention goes he is protected. It is not, however, necessary that a machine should be of such general utility as to supersede others of the same class in use, but it must not have been known or used by any other person than the patentee in this or any other country, when a patent was first taken out. When a patent is impugned on the ground that it was previously in use, the matter of fact must be left to a jury. A patent cannot embrace subjects entirely different—that is, for distinct improvements or inventions; as for each of such separate patents must be taken out. Thus, if a patentee has invented several improvements in machines, there must be a patent for each improvement. As to combination, it is not sufficient to give validity to a patent that the specific machine with all its combinations and effects did not exist before; for if similar effects were produced by the same application of machinery in separate parts, and the party merely combined them together, or produced a new effect, the patent could not be sustained; *e.g.*, if an individual invented a new handle to a particular machine he would not be entitled to a patent for the same. In fact, a whole machine for which a patent is claimed must in practice be a new machine, and the patentee of a simple improvement gains no right to manufacture that machine; and in every case an improvement must consist of more than a change of proportions. It is not settled whether improvements in different machines can be comprehended in the same patent, so as to give exclusive use of the several machines in combination; but letters patent may issue affording protection to inventions, discoveries, and improvements in any arts, reference being made to the result. A new combination is patentable, although the parts of the apparatus are old. No patent can be taken out simply for a principle or function detached from a machine. By the principle of a machine—which is patentable—is meant not the elementary principles of motion, but the peculiar device or manner of producing a given effect. The expansive power of steam and the mechanical powers have been understood for ages, yet a machine may be entirely new in its mode of applying them, so as to entitle a patent for the whole combination. A single patent may be taken out for several improvements which conduce to the same purpose, although each be capable of a distinct use and application without being united. If two machines, substantially the same, produce the same result, though varying in forms, proportions, and degrees of utility, the first applicant secures the patent, while the second applicant is entitled to claim his improvement. A joint patent may be taken out for a joint invention, but if each patentee obtains a separate patent as his exclusive invention, and afterwards both obtain a joint patent for the same, as for a joint invention, they are stopped by the latter from asserting any title under the separate patents.

The material question in patent causes is, whether the effect is produced substantially by the same mode of operation and the same combination of powers in both machines, as mere colourable differences or slight improvements are not allowed to invalidate a patent.

Both for guidance in taking out a patent, and for protection afterwards, inventors should understand that an infringement consists in using, or selling, without authority, a substantial part of a patented invention, although the form may be different. Where a patent, however, is taken out for a combination, the use of a part of the process and combination is not an infringement, even though it include the most essential parts.

Patents are entitled to liberal construction, not being granted as restrictions on the rights of the community, but for the promotion of science and the useful arts. Yet no individual right is infringed, as a patent is not a monopoly of what previously existed and belonged to another. For the same reason, a patentee cannot be stripped of his rights by slight improvements.

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* *The Stationer*

SOME PHENOMENA OF LIGHT—FLUORESCENCE.*

Light takes eight minutes to travel from the sun to the earth. When it reaches the earth, its properties may be tested by experiment, and it is found that light may be made to turn wheels and to lift weights, for it possesses inseparable heating powers, and heating force can always be made to do work. Light, therefore, is motion of some kind, or it could not impart motion to solids. At one time it was supposed that luminous bodies emitted particles with enormous velocity, which particles, impinging on the retina of the human eye, caused the sensation of light. This view was held by Newton. The emission theory, however, has been proved to be untenable, and now no doubt remains that light is the wave motion of an almost infinitely elastic fluid, which fills all space from star to star, and is believed to bathe the atoms of all solid, liquid, and gaseous bodies. This fluid is known as the "interstellar ether."

Waves of sunlight are of different lengths, all mixed together. But these waves may be separated from each other, and spread out upon a white screen, with the shortest wave at one end and the longest at the other, all the intermediate gradations being orderly arranged between the two extremes. From this power of separating, measuring, and examining the waves, have resulted all the modern discoveries in spectrum analysis, phosphorescence, and fluorescence. A simple method of separating the waves is to take a glass prism and hold it horizontally where the sunlight is streaming in through a window. The waves, passing through the prism, will be bent out of their course, and some of them will be thrown upon the wall at the other end of the room. The rays thus thrown will be coloured, with the red at one end and the blue and violet at the other, with yellow and green in between. Colour, in fact, is nothing but a phenomenon of wave-length, a short wave producing the sensation of blue, a longer wave producing the idea of yellow, and a still longer giving the sensation of red. There are a vast number of invisible waves coming to us from the sun, some of them too short and others too long to produce any sensation upon the retina or nerves of the human eye. In fact, the invisible waves of the sun are far hotter and do about nine times more towards warming the earth than those waves which excite the sensation of vision.

On examining the colours, or "spectrum," thrown upon the wall by the prism, it will be seen that the blue waves are most bent from the original direction of the sunbeam, and the red rays least bent from that direction. In other words, red and blue rays have different refrangibilities. At one time it was believed that the refrangibility of any particular ray could not be made to vary, but the discovery of fluorescence has shown that under certain conditions the refrangibility of light does vary. To show this, a good supply of blue and violet light is necessary, such light consisting of short waves; and the experiments are very beautiful.

Choose a room where the sun shines in through the window, and then block out all the light, by means of a shutter or otherwise, taking care that all cracks are stopped. Then cut a hole about six inches square in the shutter, and stop the hole with two or three thicknesses of rich deep blue or bluish-purple glass. A broad beam of deep blue or purple light from the sun will thus stream down into the otherwise dark rooom. Then hold in the deep-blue light a bottle or other article made of uranium glass.

Ornamental bottles made of this glass, which is sometimes called "canary" glass, because of its light yellow colour, are commonly on sale in chemists' shops. They are plentifully made to hold smelling-salts, and may cost from sixpence to three shillings each. The blue light should be very deep, and not very brilliant. When the uranium glass bottle is held in it, the bottle will appear to glow with great beauty, with all the brilliancy of a glow-worm, or as if white hot. Here, then, the short, dark-blue waves have fallen upon glass, and that glass has taken them up, and lengthened them out into yellow or much longer waves.

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* *Scientific Review.*

Instead of the uranium glass just mentioned, a solution of freshly-dissolved pure sulphate of quinine may be held in the blue rays to show fluorescent phenomena, but the result is not quite so striking as with uranium glass. White rags wetted and dripping with the solution will shine like the moon when held in the blue rays. Any rich blue glass will do for the window, about three thicknesses of the common cobalt blue glass of the shops being usually sufficient when sunlight is used. Violet glass, not too red, gives still more beautiful effects, the richest of the whole being produced by manganese glass. In lecture experiments on fluorescence, the electric lamps are used, with discs of manganese glass in front of the condensing lenses. A very good ghost has been made by clothing a man in a dress covered with beads of uranium glass, with a mask on his face covered with sulphate of quinine. When such a man is illuminated with scarcely visible violet rays of low brilliancy, he glows out like the full moon in a dark room, and has a hot appearance, as if newly arrived from an unpleasant place, the road to which is paved with good intentions—at least, so we are taught by those who profess to know the locality.

Fluorescent bodies lengthen out the short invisible waves beyond the blue end of the spectrum, so as to render them visible; at least, this is the opinion of Professor Stokes, who has written one hundred quarto pages in the "Philosophical Transactions" of the Royal Society (1852), in order to demonstrate it; but since then the still more curious phenomena of phosphorescence have been studied by very able writers, both at home and abroad, and appear in many cases to be very intimately connected with those of fluorescence.

Correspondence.

THE FORTHCOMING EXHIBITION.

Sir,—In your last number, a correspondent suggests that the interest of the forthcoming exhibition of the Photographic Society would be greatly enhanced if the contributors were to state details of the processes, lenses, &c., employed in their production, on the margins of the pictures.

In the infancy of the art there could be no objection to this method of giving a lesson, as well as showing a picture, but photography has now thrown off its swaddling clothes, and its results should no longer be looked upon as a series of interesting experiments, the details of which it is important to state. The exhibition should no more be understood as a display of specimens of the capabilities of various lenses, as suggested by your correspondent, or as the results of chemical processes, than should the pictures of the Royal Academicians be regarded as examples of the pigments made by the various manufacturers of colours. Fancy Landseer labelling one of his pictures thus:—

"Picture of a boy and dog. The boy drawn from a lay figure, the dog from a stuffed specimen. Painted in oil. The canvas prepared according to my new formula (see *Art Journal*, No. ——), and strained on deal frame. Charcoal was employed to make the sketch. The colours prepared by Newman (formula not attainable). The depth and brilliancy, and the universal application of the new cyanine are shown in the boy's eyes, in his coat, and in the sky. The hair of the dog was produced with Winsor's well-known wide-angle brushes. No siccatif or other medium employed. Painted at one sitting to secure harmony."

It strikes me that a label of this kind would knock all sense of art, poetry, or feeling out of any picture, or, at least, out of the beholder's appreciation of it. Then why should artists who employ chemicals and lenses instead of paint and brushes to produce their pictures be asked to undergo the disadvantage of dissection or analysis when exhibited to the public? I look upon it as an impertinence to ask an artist to explain on the frame of his picture the mechanical details by which he has brought it to perfection, instead of enjoying the thought which originated, the art which composed, and the skill which elaborated the result intended for the beholder's gratification and pleasure. If the amateur wants instruction, let him turn to the pages of the Photographic News, where he will find published all that is known, except the puzzling "Secret of the Gulls"; or, if he cannot find what he wants, let him ask for the information, and he will find many who are always glad to be of use to their fellow workers, to tell him what he wants to know.

There could be no objection to dividing off a certain portion of the exhibition (say the small room), for the display of processes and the results of lenses, but let the photographic exhibition be an exhibition of photographs, just as the exhibition of the Royal Academy is an exhibition of paintings.

October 25th, 1869. Exhibitor.

Dear Sir,—Would it not add to the interest of the photographs, in the forthcoming exhibition in Conduit Street, if it were stated in the catalogue, by means of an initial letter or otherwise, if the exhibitor were an amateur? For instance: amateurs might employ the letter "A," and professionals "P."

Would you tell me if cartes-de-visite are exhibited, and, if so, how should they be sent, in a large frame, or singly, or in an album?—Yours truly, Brephos.

Harrow, October 25th, 1869.

[Cards will be exhibited. They had better be exhibited in a large frame.—Ed.]

THE SEA GULLS.

Sir,—"An Amateur" occupies half a column of the last week's News on the price he has been asked for copies of our Sea Gulls. The picture seems fated to be a mystery in other details than that of its birth; but as "An Amateur" appears to have taken great interest in its price, we are sure he will be glad to know that the publication price mentioned in the Editor's note to his letter was strictly correct, and that the copy he saw in the upper part of the town was not exhibited for sale at all. If it had been sold, we should have been glad (for private reasons) to get it back at ten times the price paid for it. Instead of being frightened by the price, "An Amateur" should have speculated boldly. We have taken care that the opportunity shall not occur again.

We much regret that "An Amateur" passed our house without calling. We take it as a great favour if any photographer visiting our town call upon us. We freely show them all that is going on—always excepting the fragments of the gull negative, the secret of which, supposing there to be a secret, we kept at first by way of joke, and afterwards for the purpose of seeing to what extent the imagination of photographers would run in the endeavour to discover a simple thing done by us, without thinking it was anything much out of the way of ordinary instantaneous photography.

We have often been astonished at the magnitude of the scaffolding photographers (especially those who are very scientific) will build to get to the top of a molehill. To invent steam engines, that they may be able to draw corks with them, appears to be a mania with some photographers who, as ordinary individuals, are sensible enough. This has been well exemplified in the suggestions made as to the manner of producing the Gull picture. And we have got many "wrinkles" from the suggestions offered. Especially are we grateful to that correspondent who suggested that the birds were dead, and did not require head-rests; and to that other one, who, improving on the idea, proposed that the number of gulls required should be stuffed, and then photographed. We have no idea of the price of stuffed gulls, and imagine fifty of them would come to a good round figure, and make the experiment costly; but we will enquire, and, if we can afford it, and can find a space large enough to hang them in, we will adopt the suggestion, and report upon it. There is a nursery rhyme that ends with the question and answer—

"'Where are you going to up so high?'
'To sweep the cobwebs from the sky.'"

We should have to request the proper authorities to omit the sweeping on the day we intended to hang up the gulls, that we might make use of the lines drooping from the webs.

We beg to answer Mr. Gulliver (and thank him for his friendly letter) that we always use a dog-whistle when we photograph animals, but we have not carried out that music on the gigantic scale he suggests, although we have no doubt that a railway train with its shrill scream would be most effective in attracting the attention of the birds.

Many of the suggestions—even including the Rev. J. H. Johnson's famous discovery that the gulls were painted and scratched on the negative—may have some sort of reasonableness about them; it may not, perhaps, be abandoning all hope of being believed to state that the negative was taken from tame gulls posed over a washing basin in the light of the magnesium lamp; but there are some extraordinary people who are so knowing that they have actually gone the length of definitely asserting that the picture is a combination photograph! We do not mind risking our secret so far as to say that if these clever people knew anything about combination printing, or were given to "the vice of thinking," they would be puzzled to know how it was done; and if they were adepts in the business, they would say it could not be done at all.

Allow us, in saying our last words on this subject, to apologize here to those men of science—optical, naturalistic, spiritualistic, and artistic, as well as those photographers "who want to know, you know"—who have written to us, for not answering their letters. We did reply for some weeks, but found the labour so heavy that we had to make a rule not to answer any more letters on the subject; but as many enquiries were merely as to the kind of gulls in the picture, we may shortly say that the majority of them are kittiwakes, known on some parts of the coast as pidgeon gulls; and we may reply to others by stating that the picture will be exhibited at the November exhibition of the Photographic Society. Robinson & Cherrill.

Tunbridge Wells, October 23rd, 1869.

Sir,—I have not seen Robinson's "Sea-Gulls," but the plan of producing the picture seems to me so simple that my only wonder is that none of your correspondents have hit it.

Place stuffed "gulls" in position against a black background; photograph them, varnish the negative, and use it to take the landscape on. The varnish does no harm, and the gulls can be placed in any position.—I am, sir, yours obediently, M.

Edinburgh, 21*st October*, 1869.

[The suggestion of our correspondent is very ingenious, but what will be the effect of photographing sea, sky, or landscape over the images of the gulls already on the plate? Those on that part where the sea comes may appear to have waves flowing over them, and those in the sky might be covered with clouds; nevertheless, there is probably something to be done with the suggestion by skilful management.—Ed.]

Sir,—I have not seen the famous photograph of Messrs. Robinson and Cherrill, therefore cannot judge how it has been done. I think that under favourable circumstances sea-gulls might be photographed on a small plate, and afterwards enlarged; but I think it is possible to produce the effect quite satisfactorily inside. Before I saw the two letters on the subject which appeared in the News of the 15th, I entertained the idea that stuffed birds might do, but instead of being obliged to destroy and stuff so many of those beautiful sea birds as suggested by your correspondent, I think that one would answer the purpose as well as fifty. Let us see how.

Have one, or say two gulls, well stuffed and suspended by a white thread against a white background; then take a postage stamp camera, and proceed to photograph with only one lens at a time, altering slightly the pose, and retiring with the camera, introducing both gulls occasionally, when you shall have a whole flock of them, from a pin point to any size on one plate. Of course it would not do to expose all the lenses, so as to arrange the gulls in rows like postage stamps, but by judiciously exposing one here and there, a very artistic flock can be got.

Now we come to the printing operation, which seems to present the greatest obstacle.

First of all have every part of the gull negative blocked out except the gulls themselves. Suppose, now, that we have to print a picture with a group of children in the foreground, and sea, sky, and gulls in the background. First of all print in the foreground and figures, then the gulls; now take the print and paint on an opaque colour over all the whites and half-tones in the gulls; the dark parts need not be touched. The next operation is to print the sea, and afterwards the sky. On washing the proof the paint comes off, and leaves the whites which it protected pure and brilliant. The gulls, which are to stand out black against the sky, need not be painted, as they are not spoiled when printing in the sea or sky. I may here remark that I have found it very difficult to join accurately the part of a picture where a white edge, such as a profile, comes against a dark sky; this is owing to the difficulty of cutting out a mask to fit exactly. This is entirely avoided by painting out the profile before printing in the sky.

Another way, and the best way, and I have done. Let the gulls be carefully and softly painted with indian ink on white paper, then photographed to any size, and print as described above.

Of course I do not mean to say that Mr. Robinson produced his gulls in this way, but I fancy this is a much more sure way than hunting sea-gulls with extensive apparatus for a portrait. —Yours, &c., Dejai.

Wick, 23rd October.

PS.—I hope to be able soon to send you two or three specimens of combination prints. D.

THE ALKALINE DRY PROCESS.

Sir,—Mr. Sutton asks why those who question the novelty of his "new process" cite Mr. Bartholomew's process as an example of priority, and why they do not cite his own book on the gum and other processes, published five years ago. A reasonable question deserves a civil and straightforward answer. The reason is simply this: that Mr. Bartholomew's process was published seven years ago, and Mr. Sutton had the acquaintance of a year or two with it before he published the said pamphlet.

I think that it may fairly be conceded that the combination proposed by Mr. Sutton had not been published before. He claims the combination of bromide of silver in an alkaline condition at the time of exposure, and alkaline development. I believe that it is quite true that a process with these three conditions in combination has not been published before, and if that now published prove a success, no one will grudge Mr. Sutton the credit of it.

Mr. Sutton seems surprised that any one should have disputed his claims, or, as he phrases it, "attacked" him in relation to his process. Will you permit me to give him one or two reasons? The reason why I, for one, did not receive without question the recent process as a "new process" was, that it resembled so closely Mr. Bartholomew's alkaline gelatine process, which Mr. Sutton had before denounced, and now ignored. Had Mr. Sutton acknowledged the prior existence of Bartholomew's process and its similarity to that now proposed, but pointed out that it just lacked a certain element of value which he had supplied, he would have cut the ground from under the feet of objectors. Nothing provokes criticism so soon as that o'erweening egotism which claims everything and concedes nothing.

As a rule, there is a strong love in the public mind of fair play, and when any man shows a disregard of it, he does not establish thereby a claim to gentle consideration. In speaking of the claims of others, Mr. Sutton treats important discoveries as mere modifications; in speaking of his own modifications, he treats them as important discoveries. He says well that against stupidity even the immortal gods contend in vain. No one can justly charge him with stupidity, but there is a panoply even more impenetrable than stupidity: I mean that of egotism. Stupidity is pachydermatous, and cannot be made to feel: egotism is hydra-headed, and absolutely increases and multiplies in proportion to the effort made to destroy it.—Yours,

A Very Old Photographer.

PERMANENT SENSITIVE ALBUMINIZED PAPER.

Sir,—In your article on permanent sensitized paper, you lead your readers to suppose that there is no free nitrate present in my paper. Now, I beg to say that there is the usual quantity of free nitrate present in every sheet, corresponding with the strength of sensitizing solution. If such was not the case, the paper could be prepared at a very small increase in the cost of unprepared albuminized paper. In my paper there will be as much silver to recover from the washings and fixing solutions as from a freshly prepared paper sensitized on a fifty-grain silver bath.

I herewith send you a fresh sample of paper, differently prepared, which, I believe, will keep sufficiently long for all practicable purposes, "may be for months, and may be for ever;" at any rate, it will give brilliant prints from thin negatives. My negatives are considered below the average for density, and I have not found any loss or want of depth in colour by using the permanent paper for printing. Perhaps, in the sample you got, the fault was more in the paper than in the sensitizing. I am rather inclined to think so, as I have been trying various kinds of paper, and in the samples given away at the meeting of the Society there were four different kinds of paper, and each slightly differently prepared.

By inserting this letter you will account (to the parties who have tried the paper) for the variety of results they may have had.—I remain, yours truly, A. L. Henderson.

London, October 22nd, 1866.

[No fresh sample of paper had arrived at the time of our going to press.—Ed.]

CHAS. DURAND'S SENSITIVE ALBUMINIZED PAPER.

Dear Sir,—Whilst giving you credit for strict justice and impartiality, yet I think you have unwittingly done me an injury in last week's paper by calling attention to a paper of mine as wanting in vigour when that paper has been withdrawn from the market two months since, and a new paper introduced not wanting in vigour. You partially rectified the error by a footnote, which, however, would scarcely be noticed by readers generally. I enclose a letter from a customer of mine to show you the feeling upon the subject amongst those who are using my paper. I enclose a piece of paper, and I feel sure you will put me right with the public.—Yours truly, W. Callaway.

[Our correspondent will see, on reflection, that we have done him no injustice. The especial claim of his paper is its keeping qualities. The only mode in which we could test its claim was by trying it after keeping it. This we did, and reported favourably upon it, adding, however, that it gave a somewhat less vigorous impression from a soft negative than freshly prepared paper. Since the sample which we tried was prepared, it appears that Mr. Durand has withdrawn it from the market to make way for a paper which, whilst possessing keeping properties, gives also more vigour and tones more easily; but, as we had no intimation of such withdrawal, our report—or rather our incidental allusion—was based on our experience with the sample then last furnished to us. A sample received since gives, so far as we have yet had time to try it, ample vigour, and tones readily to a rich colour.—Ed.]

ABSORBING THE SMOKE OF THE MAGNESIUM LIGHT.

Sir,—Allow me, through your columns, to inform your readers that the perfect consumption or absorption of all smoke or fumes generated by the combustion of magnesium or other metals and minerals was accomplished by myself in the presence of two gentlemen most interested in the general application of magnesium as a light; but owing to the very expensive character of a seven or fourteen-years' patent, and the perfect worthlessness of it when obtained, I decided to lock it up in a box with several other more or less useful inventions, until such time as a sufficient demand would guarantee the excessive outlay.—Yours truly, A. G. Grant.

Dublin, October 19th, 1869.

Proceedings of Societies.

Edinburgh Photographic Society.

This Society opened its winter session on Wednesday, October 20th, under the presidency of Mr. Thos. Rengle, of the firm of Ross and Rengle.

After the routine business had been passed,

Mr. John Nicol, chemist, read a paper on the "Uses and Reactions of Nitrate of Ammonia in the Printing Bath."

After reading the paper, the subject was discussed by those present with considerable keenness.

The Chairman having reviewed and wound up the discussion, a large number of photographs were exhibited, being the result of the summer meetings of the Society, which have been held this year in various districts round Edinburgh instead of in the usual place of meeting.

A very harmonious meeting was brought to a close by a vote of thanks to those who had contributed to the interest of the evening.

Talk in the Studio.

Monster Photographs.—We have recently received from Mr. Restall, of Birmingham, an example of a class of work upon which he is now engaged, which is in some respects *sui generis*. The size of the plates upon which the negatives are produced is thirty-seven inches by twenty-four inches, unquestionably the largest plate we have ever seen used for collodion negatives. The print before us—a magnificent reproduction of a group in sculpture—is not quite thirty-six inches long by fifteen inches deep. The subject—which is executed in *alto relievo*—is the "Last Supper," apparently after Leonardo Da Vinci, although not a precise copy of the painting. The sculpture was exhibited at the last Paris Exhibition by an artist whose name escapes our memory; it is of colossal size, in white marble. Having been purchased by a firm in Birmingham, the reproduction by photography was entrusted to Mr. Restall, the work having to be executed in the yard of the factory of the present owners, with, of course, all the inconvenience of an improvised dark room. It is, notwithstanding these difficulties and the enormous size of the plate, as perfect a piece of photography as we have ever seen in any size, from a card portrait upwards. The lighting is admirably managed, and produces not only fine modelling, but good chiaroscuro. There is neither stain, spot, or blemish of any kind, but all is delicately and perfectly rendered. A fine feeling for the quality of the sculpture has evidently governed the work; a little over-intensification would have produced chalky lights, destroying at once harmony and repose, as well as modelling; but here all is in perfect keeping, a noble rendering of a noble work of art. We have not space for further remark here, but shall refer again to the means employed in this work.

Messrs. Holroyd's Studio.—The *Harrogate Advertiser* devotes nearly a couple of columns to a glowing description of the photographic studio of Messrs. Holroyd, known as Esplanade House. Of the excellence of their work we have before had occasion to speak, and from the description here given the establishment is evidently a very extensive, convenient, and complete one. We shall endeavour shortly to make space for some extracts from the description, which may interest our readers.

Photograph in the Eye of a Fish.—A correspondent writes to a contemporary:—"The mistress of a house was cleaning a large cod fish, when, to her astonishment, she discovered an exact representation of a fisherman in the eye of the fish. It was a very distinct miniature likeness of a fisherman, with his sou'-wester on, and fully equipped, in the act of hauling the fish into the boat."

A Novel Announcement.—In the window of a photographic gallery in Railway Street, Beverley, is the following announcement, name and address omitted:—"Wanted, Mr. ——, groom of ——, to call and pay for his portrait. N.B.—This notice will remain here till the portraits are paid for." Attached to the notice is a carte-de-visite of the unlucky debtor.—*Beverley Guardian.*

Photographs of "Loafers."—The photographers of Milwaukee have cleared the streets of that city of loafers by photographing the groups and exhibiting them in the windows as "City Loafers."

Two Studios in One "Back-yard."—A somewhat curious case was recently tried in Knaresborough County Court, in which two photographers are brought into unfairly close proximity and competition with scarcely as much love as the two kings of Brentford on one throne. A local paper states that Mr. E. Aldis, photographic artist, Harrogate, brought two actions against his landlord, Mr. J. Walkington, also of Harrogate. Mr. Capes appeared for the plaintiff, and Mr. Thompson, barrister (instructed by Mr. Malcolm Bateson, solicitor), appeared for defendant. The first action was brought to recover the sum of £50, damages and costs, sustained by reason of defendant, on the 9th of August, having unlawfully entered the premises of the plaintiff, and distrained illegally upon his furniture, &c. In the second case plaintiff claimed £50 by reason of Walkington having unlawfully built a photographic gallery for another photographer in plaintiff's back yard, and by so doing preventing him from carrying on business, by interfering with the light, besides subjecting him to serious inconvenience and annoyance. The defence in the first action was that the distraint was legally made, as the agreement was, when plaintiff took the house, that the rent should be paid quarterly, in advance, and that as the plaintiff had been in the house more than three months, he had a right to distrain, even if the agreement was not to be paid in advance. However, plaintiff, his daughter, and other witnesses proved that plaintiff refused to take the house on those conditions, and that defendant said they should have it their own way; and that the arrangement was to be paid half-yearly, and not in advance.—His Honour found for plaintiff; damages £10 10s and costs. In the second case, after hearing the evidence, he said that defendant had failed to show any right to such an erection upon the plaintiff's premises, and gave judgment for plaintiff for £20 and costs, making a total of £30 10s. and all costs.

CURIOUS USE OF A PHOTOGRAPHIC STUDIO.—The *Golos* of St. Petersburg states that the principal meeting place of the Skoptzi (sect of the mutilated) has just been discovered at Moscow in the house of four brothers named Koudrin. These men had a photographic studio near the theatre, where the idols adored by the Skoptzi were manufactured. M. Tikhomiroff, the Crown prosecutor, has discovered some of the persons employed in this manufacture, who have confessed that the Skoptzi hold their religious meetings in the house at night, and that there is a convent attached to the building. An inquiry has since taken place, from which it appears that the brothers Koudrin have been in the habit of kidnapping children between the ages of eight and twelve, and then forcing them to become members of the sect. The district of Serpoukhov, in which the house is situated, is said to be full of Skoptzi, and forty-eight women belonging to the sect have been arrested.

PHOTOGRAPHY AND BOOK ILLUSTRATION.—Amongst the forthcoming books in which photography is used for illustration, Messrs. Provost and Co. announce for publication, during the ensuing season, the following:—"Venice and the Poets," containing selections from Byron, Browning, Clough, Rogers, Shelley, &c. The work will be edited by Stephen Thompson, and illustrated with ten photographs taken expressly for the work by that gentleman. "A History of Gibraltar and its Sieges," with photographic illustrations by J. H. Mann. "Our English Lakes, Mountains, and Waterfalls," as seen by William Wordsworth, fourth edition, with photographic illustrations by Thomas Ogle. Two volumes intended as the commencement of a series of "Public School Histories," viz.:—Harrow, by R. Pitcairn, with eight photographs by Russell Sedgfield; and Uppingham, by the same author, with ten photographs by Charles Drake.

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To Correspondents.

NOVUS.—The thin plates of glass with which we tried our experiments with Carl Meinerth's method of producing photo-mezzotints can, we should think, be obtained from any dealer in photographic glass. We simply selected, from the stock of some hundreds of plates which had been accumulating during many years in our possession, the thinnest pieces we could find. Possibly our correspondent will do well to ask some dealer to select him a few plates. There is a glass of French manufacture sometimes in the market which would probably answer well. It is of a bluish green tint, and generally in thin plates.

MUS.—The distance from centre to centre of the lenses of a stereoscopic camera should be the same distance as the human eyes are apart, which averages about two and three-quarter inches. As it is better to err on the side of greater than less distance, we should recommend the lenses to be placed three inches apart. It is not necessary to measure from the centre, as the distance between any two similar points must lead to the same result. The simplest plan is to measure from one edge (say the right-hand edge) of each lens, and the result will be precisely the same as in measuring from centre to centre. 2. Rapidity of action in a lens depends upon several causes, of which the number of reflecting surfaces is only one, and not the most important. The chief element upon which rapidity depends is the angular aperture. The larger the aperture and shorter the focus the more rapid the action; hence if one lens of eight inches focus require a stop of (say) a quarter of an inch in order to secure good definition, and another lens of eight inches focus will yield equally good definition with a stop half an inch in diameter, the latter will work four times more rapidly than the former, other things being equal. We have not made a comparative test of the two lenses you name, but believe the triple is the most rapid, because it may be used with wider aperture.

J. R. (Northampton).—The exhibition will be open for a week, commencing on the evening of the ninth, from nine o'clock in the morning until dusk. The best time for seeing the pictures with a good light and without interruption will be in the forenoon.

W. T. R.—The time which albuminized paper may be kept after sensitizing depends much on circumstances. Some samples of paper, excited on a strong bath, will, when the weather is warm, begin to change on the same day they are excited, whilst some will keep a few days. In cold weather, paper kept in a dry place will sometimes keep a week, but rarely more, unless some addition has been made to the bath to aid in preserving the paper. The toned and fixed print is a good colour; but the other still retains a little dingy yellowness after fixing. For open-air pictures the examples you send are of more than average merit.

R. J. MCDOWELL.—If the quantity of silver solution be large and the amount of toning bath small, it is probable that the silver solution may be made fit to use again, as the chief thing which would happen in consequence of the mixture would be the precipitation of a portion of the silver as a chloride, and the precipitation of the gold as an oxide. If the solution be sunned and filtered, it will probably work all right. If there were a large quantity of toning solution it will be well to add the whole to the chloride residues, and simply recover the silver and gold. 2. The NEWS is always published on Friday morning, and should reach every part of the kingdom on Saturday. The delay is with your newsvendor, we presume, but we know of no good reason for the delay. We will endeavour to make enquiry. Through whom do you receive your copy?

YOUNG AMATEUR.—A No. 1 card lens will answer admirably for producing half-plate transparencies from card negatives; a No. 2 would be less convenient on account of its longer focus. 2. Either 3 or 4 will give you good results; 3 the most brilliancy and delicacy, 4 the least trouble in management.

J. F. T.—We regret that we cannot give you any idea whatever of the negatives of Grecian and Syrian scenery. Your best mode of obtaining an estimate of their value is to send prints to such a house as Marion's. You will then probably get information as to the possibility of selling the negatives or the prints therefrom.

JOHN TERRAS.—The "Photographic Teacher" is out of print. Possibly a new edition of it may one day be produced. 2. We have not tried the papyroxyle in connection with that formula, but it is probable that it would answer well. 3. The additional side-light you propose will undoubtedly be an advantage.

FILIE.—There are many forms of toning bath which will keep. The acetate bath, made by adding thirty grains of acetate of soda to one grain of chloride of gold and five ounces of water will keep. The chloride of lime bath, one grain of chloride of lime, one grain of chloride of gold, and five ounces of water, will keep. Mr. Bovey's bath, described in our last volume, and in our last YEAR-BOOK, will keep. The two first mentioned require keeping a day or two before use. The acetate bath gives with facility warm tones, and the lime bath is best suited for black tones. The "muriate of ammonia" referred to by Mr. Hallenbeck is not for addition to the toning bath. It, as well as the other salts mentioned, is referred to as giving a specific colour when used for salting the paper before sensitizing.

W. A. R.—The photographic exhibition opens on the 9th proximo. It will not be open in the evenings, except on the opening night. Coloured work will be admitted.

ZERO.—As you will learn from an article on another page, you will be able to gain admittance to the exhibition without special introduction. It will be free to the public after the opening night.

B. and W.—We believe that no steps have yet been taken to patent the Alberttype process in this country.

J. M. G. (Monaghan).—The rapid rectilinear with full aperture of the size you name will include on a ten by eight plate an angle of from 40° to 50°. To include a larger angle you should use for same size plate a lens of the same make, but shorter focus; in that case you may by stopping down cover from 60° to 80°. This lens is, under similar circumstances, twice as rapid as the triple. We cannot speak with certainty of the angle of the other lens named. Its rapidity is about the same as that of the triple.

R. STYLES.—The yellow spot is, we have no doubt, caused by imperfect fixation. From some cause, probably the formation of an air-bubble, the hypo has not acted perfectly on the spot, and a patch of insoluble hyposulphite of silver has been formed, which has issued in the yellow spot.

C. X.—The specific gravity of a silver solution containing nitrate of soda, &c., is no guide, of course, to its strength. The method recently described by Mr. Wilson at the Liverpool Society, and published in our columns, is simple and useful. Mr. Bovey described his method in our last volume, page 221, and also in our YEAR-BOOK for 1868.

W. L. NOVERRE.—Thanks. We shall have pleasure in receiving the further results of your experience. Lac varnish is doubtless one of the best you can use. Our chief reason for censuring the manufacture of varnish by amateurs is that few of them are sufficiently familiar with gum-resins to select carefully either these or the solvents, and a good negative is too valuable a thing to risk injury by the use of doubtful varnish. Your remarks on the subject we can quite endorse.

RECEIVED: "*L'Autofotografo*," by Alfonso Vernoni.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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PAPERS AT PHOTOGRAPHIC SOCIETIES.

THE mode of conducting photographic societies has been the subject of much discussion in photographic journals, and many persons, competent and incompetent, have undertaken to decide the conditions which should obtain. We are not about to enter into the discussion here, but we have one hint to offer—or, rather, to repeat and enforce—in regard to photographic meetings, which may, we think, be useful.

One of the primary and recognized anxieties in regard to meetings is the continually recurring difficulty of obtaining papers. It has been deemed by those who conduct our societies that the usual plan followed in the meetings of most scientific bodies should be of necessity followed: that a paper on a specific subject should be read and discussed, and, if possible, that some discovery or important novelty should be provided for consideration at each meeting. A meeting without a paper has generally been regarded as a thing to be seriously deprecated, as implying declension in the society; and this idea has been enforced inconsiderately, or foolishly, as we think, by some who write on the conduct of photographic societies. Where a good paper on an important subject can be secured, it will no doubt conduce much to the interest of the meeting and the advantage of the society; and in regard to some sciences embracing wide fields of enquiry which present constantly varied subjects for progressive research, in which many investigators are employed, it may not be difficult to provide a constant and varied supply of papers. In the early days of photography, when the progress of discovery was rapid, fresh subjects for consideration and discussion continually pressed themselves upon the attention of photographers. But in many respects the conditions have become changed. Discoveries, it is true, are still occasionally made, and novelties of greater or less interest come under the attention of experimentalists or practical men. It is important to remember, however, that the chief subjects of interest for discussion at societies which now arise are of a practical character, and can frequently be better and more easily stated in a few words *viva voce* than in a formal paper. The object of many members in attending meetings is more frequently to gain information than to impart it, and the brief practical statement of a previously unobserved fact, or new difficulty, or old difficulty which has not been satisfactorily solved, may elicit an instructive and interesting discussion which a formal paper might fail to evoke. We have before stated our conviction to this effect, but we have been forcibly reminded of it by reading an article on the conduct of scientific meetings in our excellent contemporary, *Scientific Opinion*, in which occur some remarks much to the purpose. Speaking especially of provincial societies, our contemporary says:—

"It is, we humbly think, a terrible blunder to imagine that it is necessary to have papers read in order to get members to meet together. Let members just reflect on what such papers are and must be. An energetic but mistaken secretary says to some member: 'You must let us have a paper for next evening.' The member thinks it over. He compiles such a contribution as boys are accustomed to prepare in those dreadful essays which the old school of pedagogues insisted on, and a number of weary members are compelled to listen to old facts mutilated by provincial eloquence. What possible good can this effect? It teaches men to be plagiarists, and retards that true love of original research on which the 'all' of science depends."

Most of those upon whom the burden of securing papers for societies has rested will recognize much truth in these remarks. It does not, however, by any means follow that the purpose of photographic societies has been achieved, and that there is no further need for their existence. In an art-science like photography there are continually new points of interest arising, much of theory and practice remains to be determined, and a community of interest amongst those devoted to its study, whether professionally or as amateurs, will long continue to furnish sufficient motive for meeting together to interchange the results of experience. But we can see no reason why all concerned should not agree to meet for conversational discussion without regarding the meeting as a failure, and indulging in gloomy vaticinations as to the decadence of the society in which it occurs. There is no necessity for the meetings, under such circumstances, becoming disorganized, or the discussions desultory to disorderliness. The "Question-Box" will generally provide a subject in cases where a matter of current interest is not introduced by some member; or, in the absence of spontaneous introduction of questions, a pre-arranged list of subjects for discussion may be brought forward, and in this way many valuable hints arising out of the experience of members may be elicited, for which more formal discussions of special papers might give no occasion or opportunity. At the South London Society, the meetings of which are amongst the most interesting of any we know, many such evenings have been pleasantly passed; and the issue is a geniality of tone and cordiality of feeling amongst the members rarely met with, but well worth emulating, in scientific societies generally.

Of course, where good papers can be obtained, they are desirable, and the aim to secure them should not be abandoned. Wherever a novelty has to be described, or an old subject requires specific re-discussion to elucidate some important point in connection with it, a formal paper is desirable as giving precision to the investigation, and permitting its record in the journals in a complete form. Our sole aim in these remarks is to suggest that the absence of such papers should not be regarded as a calamity, nor as indicating that the society has ceased to have aims sufficient to warrant its continued existence.

COLLODION NEGATIVES ON LARGE PLATES.

We referred in our last to a series of enormous negatives which Mr. Restall, of Birmingham, is at present engaged in producing, the size—thirty-seven inches by twenty-four—being the largest, so far as we have any record, ever produced, whilst in excellence, so far as we can judge from the example before us, they are not surpassed by anything we have seen on plates the most easily manipulated. As Mr. Restall will send some examples of his work to the forthcoming exhibition, those interested in the subject will have an opportunity of forming a judgment for themselves.

In the meantime, a few words on the production of monster negatives may not be uninteresting. It is obvious that, apart from the mere cumbrousness of the plate, and the consequent difficulty in rapid manipulation, there are other troubles involved, one of the greatest of which is that arising from the large surface to be covered with collodion, the necessarily rapid evaporation and consequent congelation of the collodion rendering it difficult to secure an even film. To meet this difficulty, a collodion containing as small a proportion of ether as may be is manifestly desirable. Mr. Restall employs a collodion of his own manufacture, containing, he informs us, equal parts of ether and alcohol, and iodized with equal parts of iodide and bromide of cadmium. To the abundant proportion of bromide much of the harmony, roundness, and fullness of detail which distinguish the group of sculpture we noticed is doubtless due. In the manipulation of some very large plates we have seen coated, two persons have been employed, each pouring on a given quantity of collodion at opposite ends, which, meeting in the middle, was rapidly flowed off in an even wave at one corner. The great point upon which success depended in that instance was the use of a large quantity of collodion, so as to preserve a large and perfectly fluid wave. If too small a quantity were employed, it rapidly began to set as the wave flowed, and uneven ridges were the inevitable result. The quantity poured off the plate was received in a separate bottle, and not added to the bulk for use again with these plates. The plate was allowed to rest upon an inverted basin, which formed a support, permitting the rapid movement of the plate to regulate the flow of the collodion. We have no details of Mr. Restall's mode of manipulating the plates in question, but he would doubtless employ a somewhat similar method. In the developer, Mr. Restall found necessary a very large proportion of alcohol and acetic acid, to enable him to cover the surface without producing lines or markings of any kind. The solution contained twelve grains of protosulphate of iron, forty-eight minims of alcohol, and a similar proportion of acetic acid, in an ounce of water. The difficulty of covering plates so large is necessarily increased when the plate has partially dried from prolonged exposure; and in the instance to which we have referred the *alto-relievo* received an exposure of two hours and a-half, during which time partial drying of the film would be inevitable.

Two of the qualities necessary in a photograph like the present, and found here in an admirable degree, involve rather conflicting conditions. It was necessary, to do justice to the perfect finish of the sculptor's work, to obtain as perfect definition as possible by the employment of a small stop, and the contraction of the aperture was necessarily detrimental to the relief and boldness desirable in the picture. A triple lens was used, of what length of focus is not stated; but we presume it could not have had a focus of less than forty inches at least, and, as the stop was three-eighths of an inch in diameter, the aperture was less than one-hundredth part of the focus of the lens. To remedy the flatness and "adhesiveness" produced by such a small stop, it was necessary to get the utmost effect of relief possible by judicious lighting. Mr. Restall used, therefore, a narrow slip of top-light the whole length of the sculpture, the width of the opening, in a shed in a factory-yard, not exceeding six inches. The effect is very satisfactory, and the feeling of relief admirably preserved.

From an examination of the print, we conclude that the background has been printed-in separately, to give due value to the figures. The masking has been very carefully and cleverly done, and a much more perfect effect of relief is obtained with the dark background introduced than could have been secured by white marble figures on a background of white marble.

MONCKHOVEN'S NEW ARTIFICIAL LIGHT.

Dr. Desire van Monckhoven has favoured us with a copy of his pamphlet, containing a description of the light recently devised by him for photographic purposes. On the 5th ult. he demonstrated satisfactorily its importance before a meeting of the Vienna Photographic Society, and delivered a lecture upon its mode of application. As we learn from him that he contemplates, at an early period, bringing the subject before the London Photographic Society personally, we shall only briefly refer to the details here.

Dr. Monckhoven divides his pamphlet into three parts, the first treating of various sources of artificial light, and especially the method by means of which he prepares his own; the second descriptive of his enlarging apparatus; and the third specifying the mode of developing the enlarged image.

One of the most intense lights to be obtained by oxidizing metals or metallic compounds at a high temperature is that derived from chloride of titanium, or chloro-chromic acid, when exposed to the action of an oxy-hydrogen flame; the light thus produced is of high actinic power, and capable of blackening chloride of silver paper to an appreciable degree in thirty seconds, the formation of titanic acid or chromic acid being brought about at a very high temperature. The introduction of moisture resulting from the burning gases had the effect, however, of decomposing the liquids and stopping up the tubes, thus rendering the construction of a lamp for this description of light impossible. Many of the metals and metalloids—such, for instance, as magnesium, titanium, chromium, calcium, phosphorus, arsenic, &c.—are capable of yielding intense lights, especially the three first, when burnt at a high temperature, but the flame is generally too large, and the smoke too dense for application to photography. There are, however, certain infusible metallic salts which not only glow, but also become changed chemically, when in that state, from the absorption of oxygen, if submitted to the action of an oxy-hydrogen flame, and these emit a light of great actinic power; it is this description of light that has been chosen.

Several kinds of oxy-hydrogen lights have been devised from time to time: the Drummond light, in which the flame acts against a cylinder of unslaked lime, but which requires the constant presence of carbonate of lime, and the surface of the cylinder to be continually changing; the Tessie du Motay light, in which the lime cylinder is replaced by means of a compressed magnesia or circonia cylinder; and the Carlevaris light, consisting of small parallel pipes of hard charcoal moistened with chloride of magnesium. Of all these lights that of Drummond is the best, and by substituting for the lime cylinder another composed of titanic acid, magnesia, and carbonate of magnesia, a suitable illuminating power is obtained. A cylinder of this description, measuring three centimetres broad and nine long, burns for three hours, and may be produced for the sum of threepence. Instead of hydrogen, ordinary coal gas is employed; and for the supply of oxygen M. Deville's method of obtaining it by heating a mixture of calcined peroxide of manganese and chlorate of potash is employed.

The enlarging apparatus is similar in its construction to a magic lantern, but the lenses employed are obviously of a superior character, and so arranged as to ensure perfect definition in the enlargements. These latter are prepared in two ways: either direct from a small negative upon sensitive paper, or indirectly, by producing in the first place a glass or paper negative. The latter method is the most satisfactory one, from the fact that the negative can be retouched, and is capable of furnishing several copies. A small positive is obtained, not by means of iodized collodion, as that gives a grey, fogged, and undefined picture; but with collodio-chloride, which yields a cleaner and more transparent *cliche*, requiring but a third of the time necessary to enlarge an ordinary collodion positive. For pictures under forty-five by fifty-nine centimetres a glass negative should be taken; above that size the employment of paper will be found more convenient. Fifteen seconds suffices to furnish a negative in this manner. In producing an enlarged positive direct upon a moistened bromo-iodized albuminized sheet, a pose of five minutes is required, and a somewhat shorter period for the development of the same. The solutions used in the last-named operations forms the final section of Dr. Van Monckhoven's pamphlet.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Holiday Portraits—Sea-Gulls or Kittiwakes—Photographic Terminology in Common Use—Parti-coloured Stereographs—Estimating Silver Solutions and Size of Drops—Sonography—Photograph in Eye of a Fish—Photographic Libels—Societies.

I find in a provincial journal a remark which assists in answering the question why Englishmen obtain their portraits in Paris rather than in their own country. The provincial journalist suggests that people never look so cheerful, so happy, or so well as when they are holiday making, and hence a holiday is seized as the time for portraiture. I think the possession of abundance of leisure, with the relaxation of the purse-strings, and the good spirits which generally prevail during pleasure tours, have quite as much influence as the real or alleged superiority of the French photography. The fact which was mentioned during the discussion of Mr. Fry's interesting paper at the South London Society, that able French photographers settling in London were not more successful than the average of their English compeers, is very suggestive on the subject.

I should think that by this time you and your readers must be almost tired of the name of sea-gulls. Nevertheless, if you will permit me, I should like to add one word. I am not going to suggest ingenious plans by which the sea-gull picture could *not* be produced. But as the picture has excited a great deal of interest, and my comments upon it partly initiated that interest, I wish to refer to one piece of criticism which, curiously enough, has not found its way into print amongst the objections to the truth of the picture. A friend, with some knowledge of natural history, to whom I was showing the picture, exclaimed, "These are not sea-gulls: their mode of flight is different to that of the gull; it rather resembles that of the pigeon." On writing to Mr. Robinson and stating this difficulty, I received an explanation which I was sorry I had not had earlier. I learnt that the birds in question were a species of sea-gull common on the south coast (especially about New Haven, where this picture was taken), commonly known as "kittiwakes" or "pigeon-gulls," the latter term being applied because of the resemblance of their flight to that of the pigeon. The term "sea-gulls" is correct enough in a generic sense; but probably the word "kittiwake," although less familiar, would have been more correctly descriptive in this instance.*

Speaking of correct terminology, I am tempted to ask the question, will anyone undertake to write a small glossary of photographic terms for the benefit of the public? It is irritating at times, although somewhat amusing, to observe the strange and ignorant misuse of simple terms in common use by persons who should know better. I find, for instance, a recent article in Mr. Dickens' *All the Year Round*, headed "Sea-side Stereoscopes;" and on reading the article I find that the meaning the writer has attached to the word "stereoscope" is, not that it is an instrument, but that it is a scene or picture. The article consists of a series of graphic sea-side sketches, and the writer speaks of a "morning stereoscope" or an "evening stereoscope," when he means a morning or an evening scene. I have before heard uneducated people speak of a stereoscopic slide as a "stereoscope," but one scarcely expects such blunders introduced into good literature.

Again, is it not a little surprising to find in a literary and scientific journal like the *Athenæum* the question raised as to whether parti-coloured stereographs have ever been produced before? Col. Sir H. James thinks—perhaps naturally—that the idea is so simple and obvious that it ought to have been discovered before; and, at the same time, he thinks that the effect is so good that had the mode of producing it been known, it could scarcely have fallen into disuse and been forgotten. At any rate, he introduces it in a non-photographic journal as a novelty. There are very few photographers, I apprehend, to whom the idea is not familiar; but it is perhaps odd, seeing that as pretty toys they are attractive, such slides have come so little into circulation.

Mr. Wilson's useful suggestion for simplifying the volumetric analysis of silver solutions is well worthy of attention. The utter uselessness of the "argentometer" or specific gravity metre for estimating the strength of silver solutions has been abundantly shown. The exhaustive paper of Mr. Hughes, read some years ago before the North London Society, placed that question beyond doubt; but the necessity of entering into calculations, not difficult, but still to some photographers apparently formidable, has deterred many from the use of the simple method of precipitating, by means of a standard chloride solution, a small quantity of the solution to be tested. Mr. Wilson suggests that the standard solution shall be of such a strength that a drop shall precipitate a grain of silver, so that it may be seen in a moment, by the number of drops required to precipitate the whole of the silver in a given quantity—say a hundred drops—of the solution. the exact number of grains of silver present. Mr. Wilson doubtless meant minims when he spoke of drops; but as it is a common fallacy with photographers to regard a "drop" as equivalent to a minim, it is important to guard against the error which might arise. It will be obvious, on a little reflection, to every one, that the measure of a drop must continually vary: a drop of oil will contain more bulk than a drop of water, and a drop of molasses more than either. A drop of alcohol, for instance, often is by measurement less than a third of the size of a drop of distilled water dropped under precisely the same circumstances. But, besides varying with the degree of density or tenacity of the liquid, drops of the same liquid vary considerably, depending on the size of the aperture from which they are dropped. In Alsop's experiments in this direction he found that a fluid drachm of sulphuric acid dropped from a large bottle contained twenty-four drops, whilst the same quantity dropped from a small bottle contained eighty-four drops, and so also with a variety of other liquid bodies. A minim-meter, or such a convenient apparatus as that of Mr. Hart, should always be used.

"Sylvanus Urban" is a little late in the field with a suggestion he gives in the last number of the *Gentleman's Magazine*. He says:—

> The time may come, though it may seem premature to expect it, when a man's words will be made to write themselves down automatically as fast as they come from his lips—when a speech will yield a sound picture, or a *sonogram*, that we may gaze upon as we now do upon a light-picture, and translate as we do the notes of a piece of music. Nonsense, you say? It is no nonsense, no dream. Go ask a physicist if he can conceive its possibility, and, unless he be a very narrow-sighted member of his community, he will reply that he can. You who now say "nonsense" would have said the same fifty years ago if any one had told you that some day the image of your countenance would paint itself photographically. But before

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* We described the birds as *kittiwakes* in our notice of the picture some months ago. In many respects they resemble pigeons in flight.—Ed.

> you repeat your derision, think of this:—Light is a wave motion, and the chemist has found a substance which the waves, as they dash against it, can transform or transmute; and so we have got photography. Sound is a wave-motion: its waves are as breakers, light's are as ripples; the former large and slow, the latter small and rapid. Now since we have got the substance that is impressible, by the little weak waves, why should we despair of finding a substance that will alter under the influence of the great, strong ones? We can make a lamp-glass ring with the voice pitched to a certain note: soon we may cause the same sound to vibrate a body that will make a mark on paper as it swings, and then we can make another working body vibrate to another sound, and so on up the gamut. Thus we shall get an apparatus which will mark the notes of a melody, each as it is sung; and after this it is not difficult to conceive a series of vibrators each attuned to one of the few separate and distinct sounds that the human voice can utter. Here will be an analogue to the photographer's camera: placed before a speaker such an apparatus will sonograph all he has to say. Some who smile at this will live to see the thing done.

Rather more than ten years ago I remember reading an article in the Photographic News, by Mr. Leon Scott, in which he described "phonautography" as an accomplished fact. He had prepared a surface sufficiently sensitive to vibrations to register accurately the sound waves, and with so much promise of further success as to justify him in hoping before long to produce a natural stenograph or perfectly autographic register of a spoken address. The subject has since then once or twice received attention. Mr. Skaife exhibited some photo-phonographs, or registrations of musical vibrations, to the *British Association* a year or two ago; but I think as yet no practical issue has followed the various experiments.

The photograph in a dead eye *canard*, which I really believed had by this time become a dead duck, has, I see, revived again; this time the portrait is that of a fisherman, and the eye that of a fish. The story has, by this time, truly acquired "an ancient and a fish-like smell," and hence probably the migration of the portrait into the eye of one of the "marines."

The decision that an offensive photograph may be a libel within the operations of the law is likely to cause some little alarm, I should think, amongst some professional photographers. I have often seen *bona fide* portraits which have been unhesitatingly pronounced libels upon the original by the sitter and "too-partial" friends. Your intimation that the element of malice is often an essential one in the construction of a libel may, however, give some comfort, as the photographer might always with truth plead, I apprehend, that he had no intention of injuring his customer!

The societies are recommencing their winter sessions. The South London opened with one of the usual good meetings which characterize one of the most active and pleasant societies I know. It was almost a pity that a member of the committee, in a recent letter, should have thought it necessary, on behalf of the Society, to contradict a narrative which no person was likely to believe. The veracity of the writer making the statement in question being pretty well appreciated, any notice of such petty attacks was certainly unnecessary; and, so far as it afforded temptation and opportunity for supporting the original mis-statement by another, it was unwise.

The North London Association is contemplating dissolution. I understand, for which I am sorry. That the time must come when three societies would be unnecessary for the wants of metropolitan photographers was tolerably certain, but one always regrets the period of demise, even of a society the necessity for which has ceased.

Provincial societies are opening well, with, in many instances, promise of a pleasant session.

PRACTICAL HINTS ON RETOUCHING NEGATIVES.

BY G. CROUGHTON.—Chapter II.

In this chapter I will confine myself to a description of the appliances necessary, the materials to be used, and the method of using them.

The most indispensable of the appliances is a touching-desk. I think I have tried all ways of touching negatives: from the primitive one of holding up the negative between myself and the light, to using a most complicated touching-desk made for an amateur. A very good plan, and one I used before I got a desk made, is to fix the negative against a window, stopping out all light except that which passes through the negative. This plan has two disadvantages, viz., that in the dark you cannot see properly what you are doing with your colour; and that your hand and arm, being held up with nothing to rest upon, are soon tired out. I will, however, describe here a touching-desk I have just had made for me:—

It consists of two frames made of mahogany, seventeen inches square, hinged together so that they open like the covers of a book; the lower frame is fitted with a mirror of silvered glass; the upper one, which is kept up with a piece of brass, and can be raised or lowered at pleasure, is fitted with deal frames blacked like the corners of a dark slide, to take plates from fifteen by twelve to five by four. The outside frame of the desk, being square, allows the inner carriers to be used in either horizontal or vertical position. By having carriers of various apertures you stop out all light except that passing through the negative; but even this I find not quite enough, so I have several masks of black paper with holes cut in them a trifle larger than the face I want to touch. These masks are pinned to the carriers by drawing pins, and it was to afford facility for using the pins that I had the carriers made of deal. I found that the light coming through dark drapery, where there is, of course, very little to stop it, was very trying to the eyes. Attached to the upper frame I have a hood of cardboard, blacked inside, so that by putting my head inside this no light can get to the eyes except through the negative. I am the more careful in this particular because there is nothing so trying to the eyes as retouching negatives; and for the comfort of working it is best to have as little unnecessary light as possible. I may here remark that if at any time you find the work becoming painful to the sight, leave it for a time; you will find you can see much better for a little rest. I myself have sat so close to the work that when I have shut my eyes to rest them I have had a distinct image of the negative before me, reversed; that is, it appears as a positive image.

The touching-desk should be placed opposite a window, if possible facing north, but on no account place it where the sun can shine upon it. The windows should be one large sheet of ground glass, for nothing distresses the eyes so much as any reflection in the mirror.

The materials I use are blacklead pencils, blacklead in powder, a stump, sable pencils, and water-colour. The lead pencils I have found best for retouching are Faber's; I find them less powdery than others. I use three sorts: F, F B, and B. But the lead, both in powder and pencils, I can only use for very large heads. For all heads under one inch I use colour. A very good colour for the purpose is Payne's grey, or a grey made by mixing indian red with cobalt blue; but I prefer a colour made from the negative film; it is some little trouble to prepare, but it is much the best for use, as it matches the colour of the negative, and your only care need be to keep the true gradations. It might not, perhaps, be so much trouble to prepare if I had the proper appliances to do it with, but my mode of procedure is very primitive: I get the films of several negatives (they must have been intensified and fixed, but not varnished); these are dried and pounded in a mortar, and then ground upon a piece of glass with a little weak gum water. It is this grinding that I find the greatest trouble, for it must be very fine indeed, or it will work lumpy.* The brushes I use are the ordinary sables used for water-colour painting; but before using a new brush I pass it through the flame of a taper to get rid of the fine flue at the tip.

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* Silver precipitated from a solution of nitrate of silver by means of pyrogallic acid, and mixed up with oil of lavender or gum water, will give a similar result with much les strouble in grinding.—Ed.

So much for the materials. Now how to use them. I will commence with the blacklead. We will suppose we have a twelve by ten negative of an old gentleman, three-quarter length. The first thing to do is to prepare the surface of the negative to take the lead. This is done by rubbing some prepared chalk over it with a soft linen rag, rubbing with a circular motion all over the parts to be touched (I may here remark that I have all negatives varnished before I work upon them, either in water-colour or lead); this takes the brightness off the varnish, and gives a fine tooth that takes the pencil beautifully.

The powder lead I use principally for filling up accidental markings, such as streaks, &c.; I sometimes use it to lighten heavy shadows under the eyebrows, and for putting in a light on a dark background *a la* Salomon. It is put on with the stump. I make my own stumps, for the leather ones sold for crayon work are too hard for the purpose. I paste several thicknesses of fine blotting-paper together with starch paste, then paste all over the inside, and roll up into a stick; when dry, it is cut to a point. This makes a much better stump for the purpose than any you can buy.

But to return to the portrait. We will suppose that we want to put a light in this background. This must be put on the shaded side of the figure; that is, if the light comes from the left, it will fall on the background to the right of the sitter, and a little below the head. Having determined where it is to be placed, dip your stump into the powdered lead, and work it over the part to be lightened, in the same manner as working on tints in a crayon drawing, making the edge of the light at the top definite, but not sharp and slanting downwards, losing itself in the general colour of the background at the side furthest from the figure and at the bottom. This being done, we will refer to the proof, which I always have printed very dark. I see by this that the lighted side of the face has all the modelling and gradations wanted; but the shaded side, being too thin, prints too dark before the light gets through the other. The modification wanted here, then, is to thicken the shaded side to make it print slower, and give the lighted side a chance to show what it can do. This may be done with the blacklead also, which should be worked in powder with the stump all over the shaded side in a flat tint. We will next proceed to the fine work upon the face. Commencing with the forehead, we will soften (with the F and FB pencils) the wrinkles upon it. I may suggest here that you need never hesitate to soften lines and wrinkles upon aged faces, as they are invariably reproduced by photography in too dark and decided lines. This may be done by working the pencil in short strokes along the darkest lines. Next we proceed to lighten the shaded side of the forehead. This is not done by hatching, but by a circular motion of the pencil, not bearing too heavy, but working light enough to see the shadow filling up without seeing the marks of the pencil. Now, with the B pencil, we will soften the lines under the eyes, working in the same manner as upon the wrinkles. Then the lines from the wings of the nostrils and the corners of the mouth claim our attention. All these must be softened, but not removed. Having manipulated all the lines, creases, and inequalities to our satisfaction, we will direct our attention to the strengthening of the lights upon the shaded cheek (working in the same way as upon the shaded side of the forehead), but being very careful to keep them lower in tone than the lights upon the lighted side of the face. This is about all that can be done with pencil. There are still two or three things to do before the negative is finished, but they must be done with colour. In the first place, the eyes want brightening. With the extreme point of the brush put a small speck of colour upon the eyes where the lights at present are only just indicated. Then the white of the eye will want a little colour stippled upon it, but only on the side the light falls upon the sitter. Then fill up any inequalities on the lips in the same way, and the negative will be ready for printing, and will well repay, by the print it produces, the time and trouble spent upon it.

In concluding this chapter, I will say a few words as to the kind of negative that is best for retouching. With an under-exposed, over-intensified negative you can do nothing; it would only be waste of time to try. With an under-exposed negative that has been very little intensified, you can, perhaps, make the most difference between the two prints before and after touching. But the best negative for the purpose is a well-exposed one, the intensity of which has been stopped just short of what would give the best print from such a negative untouched.

(*To be continued.*)

TRANSFERRING ENGRAVINGS AND PRINTS.

BY JAMES MARTIN.

Reading the queries of "P. L." respecting the transferring of lithographic impressions to glass in your issue of the 22nd inst. brings to my recollection the old process of transferring used for the ornamentation of white wood fancy articles some years since, so much the fashion amongst ladies. It was simple in manipulation, and very effective when carefully executed, and the article afterwards well polished. The lithographs were executed purposely on very porous paper; a transfer varnish was used to stick the impression face downwards to the article to be ornamented, the paper being first thoroughly soaked, but not wet, upon the surface. Care required to be taken, so that no bubbles or dust prevented its thorough adhesion. The margin was cut away, a piece of paper being placed over the lithograph. It was well rubbed down, either with the hand, or, better still, by a rubber made of a handkerchief or piece of soft rag. It was then allowed to dry thoroughly, then again well soaked with water, and, whilst damp, the paper was gradually removed by gently rubbing it with the finger in a circular motion, the finger being all the while kept damp by now and then dipping it into a cup of clean water. The article was then allowed to dry thoroughly, and afterwards varnished, and finally sent to the polisher to be French polished.

Since that time several modifications of this style of ornamentation have been brought into notice under various titles, such as potihcomanie, in which process the paper is not removed, and the lithograph is generally fixed to the inner or under side of the glass diaphanie; here the paper and impression are both made transparent, and thus attached to the glass. The decalcomanie, which is, in fact, an improved method of the first-mentioned transfer process, with this variation, viz., that the face of the porous paper on which the impression is printed is first prepared with some substance soluble in water (most likely gelatine), which, after the print is fixed down upon the article it is intended to ornament by means of transfer varnish, with due precautions as to bubbles, and allowed to dry thoroughly as in the former case, the paper, upon being well damped, and *gently raised by one corner*, will allow of being entirely removed from the glass, having only the ink of the impression upon it, fixed thereto by the varnish first applied. Another coat of varnish should be given when dry, which will bring out the impression in all its brilliancy. The transfer may be made at any length of time after printing, provided the picture is kept dry. I think that "P. L." will find all his queries answered, but should he wish any further information, if he will favour me by stating it per post, I shall be pleased to assist him.

I am inclined to think that by some such process as the above photographic impressions also might be transferred to various surfaces, and thus become useful and ornamental in many ways, more easily made, and adapted to a far greater variety of surfaces than transfers from glass plates. When looking over scientific memoranda with a hope of being able to assist "F. L." I came across the following, which being somewhat to the present purpose, and thinking it might be interesting to some of your experimental readers, I beg leave to insert.

To transfer engravings to paper, make a solution of iodine sufficient to cover the bottom of a photographic dish of such a size as will allow the engraving, when laid over it, to lodge upon the edges of the dish, and expose over the entire surface the iodine vapours. Let it remain thus a few minutes. Dip a piece of white paper, same size as engraving, in a weak solution of white starch, and, when dry, then in a weak solution of sulphuric acid; when again dry, lay the prepared paper upon the engraving, place both for a few minutes in a pressure frame or other press. The lines of the engraving will thus be reproduced in all their delicacy and finish. Iodine has the property of fixing the blacks of the ink of the engraving upon the prepared paper, and not the white parts. This process, in ingenious hands, might be of great service in producing facsimiles of rare copies of valuable engravings.

114, High Street, Ilfracombe, Devon.

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PHOTOGRAPHY IN GERMANY.

BY DR. VOGEL.

New Printing Process à la Albert—Monckhoven's Collodio-Chloride of Silver.

You have published some weeks ago a proof of the Albert process, the most interesting thing in the photographic department of our country, and also mentioned the different opinions on the process, and its importance for the ordinary photographer. M. Albert has already introduced a large printing establishment, with twelve presses, in Munich, and will give instructions to every man desiring to learn the process. I do not know the honorarium required for this instruction, but it is curious that already another establishment is started here in Berlin for giving instructions in a new half-tone printing process, quite like Albert's, named "Lichtdruck" (light printing process). The inventor of this Lichtdruck is M. Gemoser, a lithographer, and the photographic firm of Ohm and Grossman in Berlin will introduce the process in practice.

At the last meeting of the Society of Advancement of Photography, M. Grossman exhibited some specimens of this Lichtdruck, and they were admired by many members. The prints were as good as Albert's; the shadows were very intense, the sharpness and lights perfect. We have seen landscapes, architectural views and portraits all from ordinary negatives, and very good, though inverted as regards right and left. MM. Ohm and Grossman will teach the process for 100 thalers (£15), and perhaps will give thus an impulse for easier introduction of the curious half-tone printing process in the practice. Is the process practically important for the ordinary portrait photographer? That is the question.

I was in the establishment of MM. Ohm and Grossman several times, and I should have liked to see the printing process on the rolling-press myself, but it was not allowed. Nobody had seen till now this printing process except my friend Prümm, who was in the establishment of M. Albert in Munich, and who observed the printing of two, only two, specimens of one plate.

I fear this printing manipulation is the greatest difficulty in the new process. It is certain the gelatine film is very soft and very easy to injure. My friend Scamoni, printer in the Imperial Printing Establishment in Petersburgh, a very experienced man in all photo-metallographic processes, writes to me his opinion on the new process, and he mentioned above all that the gelatine printing surface will not allow any touching, and for this reason the plate is not capable to deliver a large quantity of prints; it is very easy injured by any trace of dust and would probably require very much accuracy, cleanliness, and experience in the printing process for making good prints.

I hope to have more to say on the printing process in the next.

From Vienna I receive the communication that our friend Monckhoven is now working out a new system of enlargement, new in chemical and optical directions. He is working with transparent positive prints on glass, made with your collodio-chloride process. This positive print he enlarges with artificial light and makes from it enlarged negatives on paper, from which he prints enlargements in the ordinary manner.

Very interesting are his communications. The collodio-chloride process he employs. He observed that if any collodio-chloride plate is exposed too long, it will solarise. He says that the plate at first assumes a violet tone, and develops chlorine gas. For this reason a litmus paper is bleached if you bring it in adhesion with the plate. Afterwards the violet-tinted plate becomes red. In this condition no free chlorine is more developed, but the plate is more pale, and if you fix such an over-exposed red plate it will not be so intense as if you fix it before, if it is only violet.

M. Monckhoven gives a very simple manner to avoid this solarisation: it is fumigation of the collodio-chloride plate in ammonia. Monckhoven gives the following formulæ:—

A.—Plain collodion cotton	1 gram
Ether	50 cub. cents.
Alcohol	50 " "
used after a week.	
B.—Chloride of magnesium... ...	1 gram
Alcohol	10 cub. cents.
well filtered.	
C.—Powdered nitrate of silver ...	20 grains
dissolved in	
Distilled water	30 cub. cents.
afterwards mixed with	
Alcohol	30 " "
D.—Powdered citric acid	15 grains
dissolved in	
Boiling water	15 cub. cents.
afterwards mixed with	
Alcohol	162 " "

For making the chloride collodion, he takes a brown or yellow bottle with 500 cub. cents. of plain collodion A, and 50 cub. cents. of the chloride solution B, shakes very well, afterwards adds 10 cub. cents. silver solution C, mixes very well, and at last adds 40 cub. cents. citric acid D. The collodion is used eight days after mixing. It is important to employ exactly the formulas above mentioned. If you have too little silver salt, the plates are not sensitive; if you have too much, it will crystallise on the plate. The plates are coated before with albumen, diluted with its equal volume of water; afterwards collodionized, dried, and at last fumed in ammonia, which is poured in a watch glass in a little box of wood. The fumigation is continued during three minutes; afterwards the plate is exposed. It is not necessary to employ any toning process. One may fix the plates after printing.

Berlin, 20th October, 1869.

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CLIPPINGS FROM THE JOURNAL OF A PHOTOGRAPHER.

II.

Friday 1st.—This morning I attempted to make some negatives when my chemical-room was at a temperature of about forty. This I found an exceedingly favourable condition for making bad work. Hence I turned my attention to something else until the mercury stood at sixty-five (at which temperature I generally strive to keep it during working hours), and then proceeded again with much better success. I have always held that having the chemicals and the room they are worked in at a temperature between fifty and seventy is essential to success, notwithstanding I have heard many operators affirm that temperature has nothing to do with making good work. I admit that the effects of temperature may be overcome by a variation of chemical combinations, but this is often more troublesome than simply raising the temperature of the room to the degree I have indicated.

Saturday eve.—To-day I have had to correct an irregularity that I never met with before. From some unknown cause, there appeared on the prints dark yellow spots that entirely ruined them. Sometimes these markings were on the albumen side, and sometimes on the opposite, which in either case were fatal to the vignettes, as they were sure to show through the paper after mounting and pressing.

After satisfying myself that there was nothing wrong in the silvering solution, the paper, and the manner of manipulating, I at once suspected the tank in which the prints were washed previous to toning. This I thoroughly washed and dried; but, in spite of this, as often as I used soft white paper, it would still show signs that it was not perfectly clean. It had been previously varnished with two or three coats of shellac, but the silver had so thoroughly decomposed it that there was no use in trying to get it clean except by a fresh coat of varnish. This I gave it, and all my trouble vanished immediately.

This bit of experience teaches me that it is not always economy to use wooden dishes because they cost less than glass or porcelain, for they often prove the dearest in the end.

I have also found some difficulty in working some collodion that I made up more than a month ago.

I used Anthony's cotton, dissolving six grains to the ounce of equal parts of alcohol and ether, and sensitized with five grains of iodide and two and a-half grains of bromide of cadmium. After standing a few hours, it turned a deep red colour. Finding, by several experiments, that I could get no satisfactory negatives with it, and judging from the speedy change of colour, I was induced to think the ether was not good. I therefore tested it with iodide of potassium, and finding it remain colourless, I took some blue litmus paper and placed it in the box of cotton from which I had been using. It speedily became red. Here, said I, is the cause of all my perplexity; so I took the cotton and thoroughly washed it, first in water then in alcohol, and dissolved and sensitized it in the same manner I did the other. In this there was no tendency to change colour to any great extent; and yet, from some unknown cause, it still worked badly. Hence I set it aside, and obtained other cotton from the same stockhouse, which I used with some of the same alcohol, ether, sensitizing agents, negative bath, and developing agents. This experiment proving good, I was more than ever convinced that it was the cotton which had been the cause of all the mischief.

The first and second lots being useless in the condition they were, I put them together, and added about half an ounce of carbonate of soda, agitated the contents for a few minutes, and then set it aside to settle. The next morning I carefully decanted off three-fourths of it, and made another trial, which, to my surprise, proved every way better than any other of the samples (of collodion) I had on hand. That these might not be lost or set aside (which they were likely to be while there was anything better in the house), I put them all into a large bottle, agitated the contents thoroughly, and set it aside to settle. I then mixed an equal quantity of this with that which I had treated with carbonate, stood it aside for a day or two, and then made a trial with it. This proved the most successful of all; so that I have continued to use this mixture with the most perfect ease and certainty, and during the best hours of the day I have found no occasion for redeveloping—a thing I always avoid when possible.

Having in these experiments consumed my entire stock of plain collodion, I immediately dissolved another ounce of cotton in equal parts of alcohol and ether, in the proportion of six grains to the ounce. In this way I have found, by manifold experience, I could keep it any length of time in a much better condition for immediate use than in any other way; for by thus standing it becomes thoroughly settled, and can be used after sensitizing in less than half the time required for collodion that is iodized immediately before or after dissolving the cotton. By this means, too, I have been able to entirely dispense with the trouble of filtering, if carefully decanted from the stock-bottles containing the plain and iodized collodion.—"G.," in *Philadelphia Photographer.*

MISCELLANEOUS HINTS.

BY M. CAREY LEA.*

Chloride of Gold.—Whilst it is always a mistake for the photographer to undertake to make his own nitrate of silver, the matter is quite different in the case of chloride of gold. Nitrate of silver can be always obtained of excellent quality and unadulterated; with the gold solution there is less certainty of this. Besides, the quantity of gold solution used is much smaller; so that in a single operation the photographer may prepare enough to last him for a very long time. Without, therefore, undertaking to say anything very new upon the subject, I shall endeavour to give clear directions, such as will enable any one who cares, to prepare this chemical for himself without danger of loss of so valuable a material.

For a first experiment it will be well to use a small quantity of material: a gold coin weighing a few pennyweights. It will be well, also, for the first time—or the first two or three times—to weigh the coin, and then, by weighing the product at the end, the operator will assure himself that he has incurred no loss of material.

The next step will be to dissolve the coin in aqua regia, prepared by mixing hydrochloric and nitric acid in the proportion of one ounce of the latter to two of the former. As gold has a large equivalent number, the quantity of acid necessary to dissolve it will be but small. A moderate excess is proper; a large excess does no harm, except as wasting the acid.

In this first dissolving of the gold its solid condition renders its solution slow, and a gentle heat may be applied to expedite it. No precautions are necessary, as in the second dissolving of the gold after its purification, when, instead of being in the solid form of coin, it is in fine powder.

The next step will be to precipitate with protosulphate of iron. The action of the protosulphate has here some analogy with the development of an exposed plate in the wet process. In the latter, metallic silver is thrown down from the silver solution; in the former, metallic gold from the gold solution. There is an important difference, however, that the gold is thrown down pure, which is not the case with the silver salt. Therefore this mode of operating cannot be used for the purification of silver; recourse must then be had to the precipitation as chloride.

In saying that the gold is precipitated in a state of purity it should be mentioned that, strictly speaking, there may be thrown down with it two other metals: the revived gold may contain traces of silver and of platinum. It is evident that there can be very little silver present in the solution, by reason of the hydrochloric acid used in making the solution, and the amount of platinum present in gold coins is infinitesimal. There is no difficulty, if desired, in getting rid of both these substances. Silver is removed by simply evaporating to dryness and dissolving with a little water, which dissolves the chloride of gold, but leaves behind any trace of chloride of silver. Platinum is got rid of by fusing with nitre. But as both these other metals are found in extremely small quantity when present at all, and are wholly without injurious effect, it would be a mere waste of time to undertake to remove them.

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* *Philadelphia Photographer.*

The operator will therefore take his precipitate as being pure. If he has already (in the case of a first trial) weighed his gold before solution, he will do well to weigh also his precipitate; first, however, washing it carefully by stirring it up thoroughly with water and allowing it to completely subside again. This is best done in a deep glass vessel; a precipitating jar is the most convenient. To get it dry (which is only necessary if it is to be weighed), pour off the last washing water pretty closely, then shake up the powder with what remains of the water, and pour out into a clean porcelain capsule. In a few moments the gold will subside to the bottom; the water may then be poured back into the glass jar to wash off whatever adheres to the sides. By repeating this a few times, the whole of the gold will be transferred without loss to the capsule. After subsiding again, the water is poured off closely, and the capsule set in a warm place to dry.

After drying, the operator can take the weight, and ascertain (after allowing for the mint alloy) whether or not he has the right quantity. If he has not, it will probably be ascribable to his not having allowed his precipitate of gold to thoroughly subside during the washing, before decanting. This is a point requiring attention. It is advisable always to pour the gold solution into the iron solution, and not reverse this order. Employ the solutions cold, and the stronger the better. The iron solution should be acidulated with a few drops of either sulphuric or chlorhydric acid: in either case, especially the former, the acid should be pure. The object of these latter directions is to get the gold in larger particles, so as to subside more quickly and more completely. If you reverse them all, using your solutions weak and hot, and pouring the iron into the gold, you will succeed just as well; but you must, in such case, leave the gold powder a long time to settle between each decantation.

Having now got the gold powder, it only remains to convert it into chloride. Mix a little weak warm aqua regia (say diluted with its own bulk of water) in a capsule, and add by degrees the gold powder. Each portion will speedily dissolve: if it does not, apply a little heat. The action of the acid on the metal in a state of powder is far more rapid and powerful than upon the solid coin. Avoid using any large excess of acid, and evaporate gently to dryness. It is best to do this on a water bath; at any rate, avoid any excess of heat. Dissolve the chloride in water, allowing eight grains of metallic gold to each ounce of water, and keep this solution by you. Each fluid drachm then contains one grain of metallic gold, and you will always know the exact strength of all the solution that you make.

A circumstantial description like that which I have given makes the operation seem more troublesome than it really is; but it also tends to save from annoying and expensive mistakes those who may try it without much familiarity with chemical manipulations.

The Toning Bath.—As the preparation of the toning bath is the immediate object of the making of the chloride of gold, a brief word on it will scarce be inappropriate here.

A simple solution of chloride of gold, largely diluted with water, will tone a print, but eats it away too much. It becomes, therefore, needful to remove the acidity, and this may be done in various different ways, which, although they act in the same general manner, give rise to gold deposits of very various shades of colour.

A very simple method of making a toning bath lies in shaking up the gold solution, diluted so as to contain about a grain of gold to the ounce, with precipitated chalk. The quantity of the chalk should be not less than a grain or two to each grain of gold. More will do no harm; the excess simply falls to the bottom. This solution is then further diluted with six or eight times its bulk of water.

A more common method lies in neutralising with bicarbonate of soda; two or three grains to each grain of gold are generally employed, and the solution diluted as above.

Acetate of soda is likewise capable of neutralizing a gold solution, and the acetic acid liberated is of no more injury than the carbonic acid in the two previous cases. Benzoate of soda, of ammonia, or of potash, act similarly. In the case of the acetates and benzoates, two or three grains to the grain of gold, precisely as in the former cases, will give a satisfactory result.

The acetates and benzoates make the best of all toning baths. Rich warm shades of purple, black, and sepia are more easily got with them than with any other. I do not propose here to enlarge upon the superiority of this form of toning bath, having already done so on a previous occasion, but cannot leave the subject without strongly recommending those who have been in the habit of using alkaline carbonate, or chalk, to give the acetate or benzoate bath a fair trial. The result, I think, will, in most cases, be its permanent adoption.

A NEW ACTINOMETER.

BY DAVID DUNCAN.*

This description of an invention of my own, which is of service to me, may be of further service by occupying a niche in your journal. At the outset, let me state that any remarks I may make upon the demerits of actinometers already introduced to the photographic world I trust will be received with common sense and courtesy. I have no desire to depreciate the merits of others for the purpose of extolling my own, giving mine freely to devotees of the art. Let it be weighed in the balances, and judged fairly by those who have occasion to use such an instrument.

A simple and perfect actinometer, registering definitely and accurately, is much needed, and the necessity will increase. Those at present in use register by tints, and not designs, which I deem wrong in principle, as tints and the various shades thereof are influenced by dryness and moisture, the luminous, calorific, and chemical rays, just in proportion as they predominate. The actinometers invented by Dr. Noyes and Mr. Swan have either numbers or letters; in both, when printing, the letter is surrounded by a tint, or, rather, is formed by a tint, the letter being opaque. In use, however, the eye wanders from the letter to the surrounding tints, and thus gets confused. If the design of these instruments is to register by the numbers alone—I mean as soon as each number is formed—they undoubtedly fail, for as soon as No. 1 is perfectly formed there is a trace of Nos. 2 and 3 upon the sensitive paper. Let me say, further, that Mr. Swan has invented one or two ingenious contrivances for registering by tints alone, and Mr. J. R. Johnson has a simple form of actinometer, by which he employs collodio-chlorides. None of them can register accurately, for reasons stated. Mr. Bing's actinometer I have not seen, and cannot, therefore, speak with certainty, but should judge, from reading the description, that it was not simple. The one I have had made for my own use registers by printing a letter or design alone, without reference to tints. I effect this in a very simple manner, by coating a piece of talc or mica with block varnish, and, when dry, scratching out the letter D, thus making a negative. I then cover half the letter with a piece of tracing-paper, or any other semi-transparent material, and also put another layer over one-third. It will be seen that, in use, one-half of the letter prints first, next two-thirds, and lastly the whole. The idea is to time the printing by the complete formation of the letter; for instance, if a carbon print required sixty seconds in direct sunlight, and the letter would be formed or printed in thirty seconds, it would be necessary to print it twice; that I accomplish by mounting the talc negative—which, by-the-bye, is small—in the following form of box.

The box is three inches square and about one and a-half inches high; a triangular opening is made in the lid, before which is attached the talc negative D. E and F are round pieces of wood or tables; the lower table, F, works on a screw, and can be raised or lowered at will. The table E, merely slips over screw G, so that it can be made to revolve by the hand when printing. Pieces of paper made sensitive, either with salt of silver or bichromate of potash, are attached to the upper table, E, by touching them in one or two places with gum, or any other adhesive substance. The sensitive paper can likewise be stored between the tables E and F. The letter D can be printed some eight or ten times on one piece of paper, which is then torn off to give place to the piece beneath.

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* *Philadelphia Photographer.*

I hope I have made the description intelligible; it is sometimes difficult to give a description of the instrument, so that its simplicity shall be apparent to all. Possibly the above is foreign to those who have never had occasion to use an actinometer; but when they should have occasion, they no doubt can refer to this paper with profit. The best way is to try all.

Correspondence.

THE CAPABILITIES OF LENSES.

Sir,—In honouring my letter, in which I protested against exhibitors being asked to explain the processes by which their pictures were produced on the margins of their pictures, with a few comments, you quote, on the other side, the typical objections of those who would prefer to know all that can be told them of the technical processes and apparatus employed. This is how you put it: "However gratifying to me," says one, "it may be to learn, from examining his pictures, that Jones is a capable artist, it is much more important to me to learn by what lens that peculiar depth of definition is obtained, or that sufficiency of angle which makes his photograph a whole picture instead of a bit of one, is embraced, and that without distortion; because the knowledge of the lens which secures given important qualities, *places those qualities within my reach*."

Without going into the question of whether good pictures are done for the purpose of showing tyros what a lens will do, or whether a true artist has any notion of making an optical experiment merely when he does his best to represent nature, I do ask—and this is the purport of my letter—whether a knowledge of the lens which secures given results in the hands of one who knows how to make the best of it, places these qualities within the reach of a novice in the art? It has always been my belief that a lens will do (within certain limits) pretty much what it is made to do. Opticians will tell you, as part of their experience, that many photographers have bought lenses on the strength of seeing pictures taken with similar lenses by skilful hands, and have returned them as not capable of producing the same definition or covering the same space as the specimens. I was once in a famous optician's shop, and heard him almost angry with a photographer for producing a fine "Salomon" picture with a lens he intended only for the cabinet and card sizes; and yet, before he was told with what lens the picture was taken, he could not say that a larger lens had not been employed. Now I believe that if this lens were put into the hands of one of less experience he would find it difficult to get as much depth of focus, &c., out of it as was shown in this example.

Another instance. It is now well known that the best landscape photographers produce their finest pictures—those full of atmosphere and life—with nearly full aperture, but if a novice attempted to follow their examples, he would probably find a woeful want of definition about some parts of his pictures. However good the organ may be, if you want to "jerk a soul-stirring strain," as Artemus Ward has it, you must know how to turn the handle.

Your illustration about the tannin process is very happy; but surely photographers, even tyros, do not want to be warned now by awful examples not to meddle with a process which has not produced a presentable picture yet. It is true that some people say they have succeeded to perfection with it, but they do not exhibit, and the question arises, which applies also to the alkaline processors (excuse the word), "Do they know when they have succeeded?" Exhibitor.

COMMUNICATION AND CRITICISM.

Sir,—As a reader of your paper, I look forward to the end of each week with great interest, for the news connected with our profession.

Allow me to thank you, sir, and the other contributors, for the many useful hints, given from week to week, in your valuable Journal; and I trust that our leading artists will be as generous with their knowledge in the future as they have been in the past.

I cannot help feeling, however, that an evil spirit has been creeping in amongst some contributors to the press, making them nervously alive to find fault with anything *new*, when the discovery or information comes from another. And these fault-finders are likely, by their ill-judged remarks, to shut the mouths of some of our best writers, and thus deprive such as your humble servant of information more useful than the sneering letters which have appeared in your Journal lately.

I refer more particularly to the criticisms on *the manner* in which Mr. Robinson has produced his pictures "Over the Sea" and "Watching the Lark." While it must annoy him to see how his best works are received by "the friends of his own house," yet he cannot but laugh at the blunders made by would-be critics. I believe that had Mr. Robinson been treated with more courtesy, we should have had from himself, ere this time, an explanation of his *modus operandi*; and one effect of the explanation would have been to hinder the writing of a great deal of nonsense on the subject.

I trust that Mr. Robinson will not conclude that *all* the readers of the News are as ungrateful as the authors of the letters alluded to have proved themselves to be, and that he will still continue to give us in your columns the benefit of his artistic knowledge. I only wish I had an opportunity of seeing more of his works, as the pictures which I saw in the Dublin Exhibition, and his beautiful and well-digested book, "Pictorial Effect in Photography," have made me one of his most ardent admirers.

Surely, sir, if photography is to occupy the high position it ought to do, it cannot be by decrying the merits of its foremost men. Let us lay aside this petty jealousy, and give "honour to whom honour is due;" for however high a man may be above the praise of his fellow-men, yet, when he is seeking and developing truth, either in art or ethics, he has a right to expect, what he will no doubt receive, the approbation of all right-thinking men.—I am, sir, your obedient servant,

Dunse, October 26th, 1869. George Bruce.

THE GULL CONTROVERSY.

Dear Sir,—It is rather surprising that no one has alluded to Mr. Robinson's letter, published in the News last spring, detailing his visit to the coast, the successful use of the syrup preservative, the number of large plates obtained, and the fact that he had secured some flights of gulls that "poised" themselves before the camera. That there should be subsequently the publication of a "sea gull" picture ought to have excited no wonder, whilst the statement of the letter should have been conclusive that no secret but that incommunicable one common to successful men had anything to do with this picture. Let us hope that our photographers will not much longer maintain the attitude of box turtles—I mean as far as published communication is concerned—by any silly criticism of their effective work, but will set on record the means used to obtain together land and sea and sky so perfectly as their studies of the present year present.—Yours very truly, R. H. P.

October 31st, 1869.

PHOTOGRAPHING BIRDS IN LANDSCAPES.

Dear Sir,—I have not been gulled by any of the gull photographs, but perhaps a suggestion or two may be of some service to those who are desirous to unravel Messrs. Robinson and Cherrill's secret.

1st. Obtain a gull, stuff it in a flying position, and photograph it fifty or as many times as it may be requisite. Larger or smaller gulls may be obtained from the same bird by retiring the camera to or from the object. For quickness this may be accomplished with a diamond camera, and the negative taken direct upon paper by means of the calotype or any other paper process.

2nd. Photograph a sea view upon glass by the ordinary collodion process. Cut the gulls neatly out of the paper, scratch out corresponding places upon the glass, and stick them upon it.—I remain, yours. &c., Pyroxyline.

November 1st, 1869.

[In any attempt to carry out such a suggestion as that of our correspondent, it should be borne in mind that in the picture in question the gulls occupy various positions: some with wings extended flying straight onwards, some wheeling in their flight, the two wings in different positions, and many others in varied positions; so that if a stuffed bird be used, its wings and neck must be made as flexible as those of a living bird; and the manipulator, in arranging its various positions, must have a good knowledge of the habits and mode of flying of the especial species he wishes to represent. When fifty birds, with the suitably varied positions, and in due proportion of perspective, have been photographed, we fear the task of clipping out of the paper negatives the exact forms of the birds on the wing, varying in size from one-eighth of an inch to an inch, and then scratching away from the sea negative spaces exactly to fit the varied birds, will prove exceedingly difficult. We are glad to record the various suggestive hints of our correspondents, but should have still more pleasure in giving publicity to the actual results of trial. If some of our ingenious correspondents would actually try the plans they suggest. and let us know the result, it would be more instructive.—Ed.]

Proceedings of Societies.

Photographic Society of Philadelphia.

The regular monthly meeting was held on Wednesday, October 6th, 1869, the Vice-President, Dr. **Alexander Wilcocks**, in the chair.

The minutes of the last meeting were read and approved.

The resignation of Mr. James N. Stone was read and accepted.

Mr. **Constant Guillou** exhibited a "photographic dodge" in the shape of a yellow shade for a candle when preparing plates in the dark room. It consists of a pint bottle of yellow glass, such as is sometimes used for gin, &c., cut off at the top and bottom, and forming a cylindrical shade or chimney. By resting this upon a brass ring, usually attached to a coal-oil lamp, an effectual, cheap, and convenient shade can be obtained, not liable to fog plates, and giving sufficient light to work by.

Mr. **Guillou** also gave his experience in washing paper prints during the long drought of July, August, and September. The supply of water in his laboratory in the country having been exhausted, the usual mode of washing in running water was necessarily abandoned. He had recourse to patting or pressing the prints on both sides with an india-rubber sponge. Ordinary sponge has been used heretofore, but the india-rubber sponge has probably not been so applied. It is more elastic, the pores or cells are much finer, and the power of suction (and hence of cleansing from hypo) infinitely greater. Prints so washed for a few minutes stood unaltered by the severe hydrogen test proposed by Mr. Lea in his valuable manual (pages 225, 226).

Mr. **Guillou** exhibited before the Society, through the kindness of Mr. Thomas Sparks, President of the Pennsylvania Salt Manufacturing Company, a number of photographs of scenery in and about the celebrated Kryolite Mine belonging to that Company, and situated in Ivigtüt, Greenland. The views were very good, and decidedly interesting in themselves, and also from the fact that they are the handiwork of an amateur, who had acquired the art in Greenland from books only, and without ever having seen a negative taken or positive printed by any other person. The size of plates were 4-4, and stereoscopic.

Mr. **George Coale**, of Baltimore, favoured the Society with two prints taken by Mr. MacPherson, the well-known photographer of Rome, with a panoramic camera, which turns upon an axis, so that a wide extent of country may be taken from one stand-point.

Mr. **Draper**, of the firm of Draper and Husted, Philadelphia, presented to the Society a charming cabinet picture of a lady. The subject was admirably lighted and posed, and the chemical work first-class. The donation also included a variety of card pictures; one of the number a young lady dressed in white, gracefully arranged, and having upon her head a delicate wreath of white flowers. This picture deserves especial credit for its great softening and freedom from solarization; and proves that by careful attention to light and chemicals, all of the excessive brightness or chalky appearance too often seen in such a picture can be avoided. Messrs. Draper and Husted may justly be proud of their success in portraiture.

Mr. **Browne** exhibited a number of prints of the Observatory at Ottumwa, Iowa, used by one of the parties sent out by the United States Government to photograph the eclipse, August 7th, 1869.—*Philadelphia Photographer.*

Oldham Photographic Society.

The usual monthly meeting of the above Society was held on Thursday evening, the 28th October, at the Hare and Hounds Inn, Mr. T. **Green** in the chair.

It was expected that Mr. Kay, of Bolton, would have been present with further examples of his new photo-lithograph, but a telegram arrived during the evening stating his inability to attend.

Mr. **Beverley** then passed some beautiful pictures round for examination, which had been produced by the same process as those shown by Mr. Kay at the previous meeting. It was stated that several members had been experimenting in the same direction, but, for want of time and other reasons, had not been able to have them in readiness for the meeting. It is anticipated that the next meeting will prove a very interesting and attractive one.

A spirited discussion then took place respecting the prizes offered for the most meritorious photograph, of any subject, taken during the present year. It was moved by Mr. G. Hall, seconded by Mr. Beverley, that, considering the present state of the Society's funds and the inclemency of the season, the prizes be withdrawn for twelve months. An amendment was moved by Mr. Green, seconded by Mr. Andrews, that the original motion stand good. Upon its being put to the vote, the motion was declared to be carried.

It was then decided that, in conjunction with the annual *soiree* to be held on the 31st December, an exhibition of photographs be held, and that a special committee be elected to make the necessary arrangements, and invite the respective societies and leading photographers to contribute pictures for that purpose.

A vote of thanks was accorded to Mr. Beverley and the Secretary was instructed to express the same by post to Mr. Kay.

The business of the evening shortly afterwards terminated.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on Tuesday evening, the 26th October, at the Free Library and Museum, William Brown Street, the President, Mr. O. R. **Green**, occupying the chair.

The minutes of the former meeting were read and passed.

A number of prints and transparencies, produced by the under-mentioned gentlemen, were exhibited :—

Fifteen by Mr. Wade, of Manchester, by the collodio-albumen process, shown by the Chairman.

Two dozen stereo prints, and some beautiful transparent enlargements, by Mr. Hughes; one of the group taken on the occasion of the trip on the Weaver being remarkably successful; also a microscopic enlargement of a flea.

Mr. **Tyrer** exhibited the results of his first year's work with the collodio-bromide process, which were much admired for their excellence.

Mr. **Roberts** showed eighteen prints on Durand's paper.

Mr. **Murray** also produced some printed in the same way, and some economical book mounts for photographs.

A print was exhibited of a spider's web spangled with dew, which had been taken at the suggestion of Mr. Watling.

Mr. J. A. **Forrest** next read a short paper "On the Fading of Photographic Prints," illustrated by numerous specimens, and said that he had prints in his possession twenty years old. Those printed by the ordinary process were, without exception, faded; those by development were as good as on the day they were finished. Some years ago he had called attention to the fact that if paper was first coated with casine, and afterwards with albumen, sensitized and exposed, the film separated from it when placed in the hyposulphite solution; that in this state it could easily be transferred to enamel paper or opal glass, and decay from the action of the hypo avoided. He showed three specimens on opal glass, which had been left to the action of the light for six years, but did not exhibit any signs of fading.

Mr. Forrest added that Mr. Thomas Higgin had this year shown him some specimens of plain paper coated with collodio-bromide which would enable amateurs to print by artificial light, developing in the same manner as transparencies, by the alkaline process, and toning with gold. Two specimens were exhibited produced by exposure for thirty seconds to the light of an ordinary gas burner. In these remarks he did not shut out of view the many modifications of the carbon process, which at present were scarcely suited to an amateur.

Mr. Bell said that he possessed prints produced by development that had faded as much as sun prints.

Mr. Wilson thought a well-toned silver print would last as long as a developed one.

Mr. Green did not think a silver print as permanent, and recommended that the water marks of the papers should be examined carefully to ascertain whether any defect in the durability of the pictures was caused by a difference in the size used by the manufacturers.

Mr. Henderson, having noticed that some sulphur-toned prints had remained almost unchanged whilst others had faded, wished to know whether the cause could be ascertained.

Mr. Williams stated that he had some prints eighteen years old that had received their final washing in boiling water, and then had remained good till the present time.

A vote of thanks was passed to Mr. Forrest for his paper, which had given rise to a discussion of such consequence.

The members then adjourned to the lecture hall, where, for an hour and a-half, Mr. J. Williams, jun., exhibited, by the oxyhydrogen light, a highly interesting series of slides, very many from negatives of his own production, and many from the collections of the following publishers:—

Picked specimens of Messrs. Stuart, Pumphrey Brothers, Woodbury, and others. They comprised landscapes, architecture, animals taken from life, &c.

At the conclusion of this prolonged and successful exhibition a hearty vote of thanks was passed to Mr. Williams, and the meeting separated.

Talk in the Studio.

Mr. Henderson's Enamels.—In our report of the Exhibition of the Royal Cornwall Polytechnic Society we noted the fact that a first silver medal was awarded to Mr. Henderson's enamels. We have recently been favoured with an opportunity of examining the two frames of pictures exhibited. We have before spoken in high terms of Mr. Henderson's enamels; the examples which so well merited and obtained the Falmouth prize constitute as perfect a collection of enamel photography as we have ever had the good fortune to see. Varying in size from a couple of inches up to half-plate, they are admirable in depth and richness, delicacy and colour, possessing a perfection of modelling and exquisite gradation to be sought in vain in paper prints. The warmth and richness of colour in the majority are exceedingly pleasing.

Photo-collographic Processes.—The recent success of Herr Albert in producing perfect transcripts of photographs by mechanical printing has induced a host of experimentalists to work in a similar direction. In this country there are several, we believe, trying to work out the same idea. In Berlin, as will be seen from Dr. Vogel's communication on another page, a similar process is being worked with success. He has favoured us with an example of the "Lichtdruck" of Ohn and Grossmann. It is a portrait of Dr. Jacobsen, and possesses fine gradation of half-tone. It is not, however, quite equal to the best of Herr Albert. We look with interest for further developments.

Recovery of Gold from Used Solutions.—*By William Bell.*—Usually iron is added to used gold solutions, and the precipitate collected and dissolved, entailing time and cost, and, in most hands, loss. Instead of this, evaporate your used gold solution to a small quantity, add muriatic acid sufficient to dissolve the oxide of gold suspended and deposited in the solution, filter out the insoluble chloride of silver (which save), and evaporate the solution to dryness, not using too great heat. Product: chloride of gold and sodium ready for use.—*Philadelphia Photographer*

Purifying Bromide of Potassium.—A paper by Dr. Beaudrimont in the *Moniteur Scientifique* on this subject, states that the bromide of potassium is first qualitatively tested for the presence or absence of iodide of potassium; if that salt happen to be present, it is removed in the following manner:—About ten grms. of the impure bromide are dissolved in a sufficient quantity of distilled water; a solution of bromine in water is then added in excess, this solution being preferable to bromine itself, as being more readily managed. The liquid is then heated to boiling, and kept so until no more vapours of iodine are given off. The liquid is next evaporated to dryness, in order to eliminate the excess of bromine. In this way a bromide of potassium is obtained free from iodide, but which may yet contain chloride of potassium.—*Chemical News.*

Oxidation of Pyrogallic Acid.—M. Aime Girard, in the *Compte Rendus*, points out that "when pyrogallic acid is oxidized in the presence of an acid, the products of its oxidation are different from those which are formed when the oxidation takes place in the presence of an alkali. Among the products there is one—$C_{40}H_{16}O_{18}$—which is a beautiful red-coloured substance, analogous to alizarine, and suitable to be used as a dyeing material. This substance is converted into picric acid by the action of nitric acid.

Removing Stains caused by Photographic Chemicals from the Hands.—M. Fortin, referring in *Les Mondes* to the use of cyanide of potassium, and of iodide of potassium, and iodine for this purpose, says the first endangers health, and even imperils life; the second is very expensive. The author recommends instead, to wash the hands with a concentrated solution of either sulphate or chloride of zinc, to which some acid is added at the same time. The deepest and blackest stains should be touched with metallic zinc, whereby the reduction of the oxide of silver or that of the gallate of iron is promoted, and all metallic stains adhering to or penetrating in the skin removed. Since most of the salts of zinc are colourless and soluble in water, the hands become soon quite clean. They should then be washed, first with pure water, and next with soap and water.—*Chemical News.*

New Process for Concentrating and Utilizing the Sun's Rays.—M. Delaurier proposes for this purpose a truncated cone, open at both ends, and lined inside with polished silver, the sun's rays being admitted by the largest opening. Since the angle of reflection is equal to the angle of incidence, all direct or reflected rays will be united at the narrower end of the cone. It is clear that the greater the length of the cone, the less the opening of its top need be, and the greater will be the concentration of heat. The author's paper, to which a woodcut is added, enters into a discussion on the advantage of this contrivance above the use of lenses and mirrors; and the author very enthusiastically surmises that the heat of the sun's rays may be so concentrated as to serve instead of the combustion of fuel, for various purposes, especially in countries where, as in Algeria, the heat and splendour of the sun is more permanently felt.—*Ibid.*

Printing Frames to Face the Light.—Mr. J. J. Burke gives the following hint in the *Philadelphia Photographer*:—"Our printing-frames come to us fitted nicely for laying down flat, but we do not always want them in that position, and so resort to every means to place them in such a way that they will receive the light direct. This is especially necessary in vignetting, if we wish to form a nice even shade around the picture. This difficulty may be overcome in a very easy manner, and save you for ever the trouble of looking for something to rest your frame against while printing. Take a strip of sheet iron half an inch wide, and double it, so that each end will reach two-thirds the length of the frame; make a hole in the ends, and, with a thin washer between, screw them on your frame. By this means you can place your frames where you wish, and at any desired angle, securing thus the same result in every vignette. Printing-frame makers would do well to observe this, for the additional cost to them would not be five cents, and it would save us a great deal of trouble."

A Collodion Filter.—Mr. A. E. Turnbull gives the following in the *Philadelphia Photographer*:—"Procure a wide-mouthed jar, holding, say, a pint, and fit it with a cork with a hole in the centre, through which fit the neck of a rubber funnel. Put a cork in the upper end of the funnel neck also. Then I cut the bottom out of a three-ounce bottle, and about one-half of the neck off. This I suspend (by means of a copper wire frame) from the under side of the cork by means of wire-hooks, so that it can be detached for cleaning. To use it I proceed as follows:—When clean, I put some cotton in the neck of the bottle, put it into the wire frame, and hook it to the cork; then force the cork down tight, and pour collodion in through the centre tube until the small bottle is full; then cork it, and let it filter. This can be done until the collodion reaches the neck of the small bottle. It works well, and is easy to clean. A wide-mouth bottle will do instead of the jar."

"Standing on Yer Head."—A correspondent of the *Philadelphia Photographer* says:—"A young Irishman and his 'darlint' came into my rooms a few days ago to have their pictures made. 'Ye have ye's drawn furst, Biddy,' said Patrick. So after much trouble she got her toilet arranged, and I got her into a graceful pose. While I was gone into the dark-room, Paddy, in walking about, happened to see her image on the ground-glass in the camera. He was spell-bound for a moment, and then recovering himself, shouted, 'Git up out of that! Git up, Biddy! For the love of ould Erin, git up! The spalpeen has ye standin on yor head! Git up!' The noise attracted my attention, and emerging from the dark-room, I soon comprehended the situation, but before I could explain, he left with Biddy, swearing vengeance upon any one who could offer such an unpardonable insult to his 'darlint.'"

To Correspondents.

Anxious.—There are only two methods of dealing with an imperfect background in a negative: you may either print in a separate background by masking the figure, or by retouching you may materially improve the defective background. The former method is troublesome, and rarely quite satisfactory; the latter plan requires considerable skill. If you retouch the background of the negative with powdered blacklead, as described by Mr. Croughton in our present number, it will print much more evenly than at present, and a little sunning down in parts will give a good result. Should you prefer the system of masking, you cannot do better than adopt the system of registration used in double printing, and described minutely in the last chapter of Mr. Robinson's recent work. As a print from an enlarged negative the portrait enclosed is unusually good. 2. In testing silver solutions by throwing down a portion of the silver as a chloride there need be no waste at all, as the chloride should be added to the residues, and the silver recovered.

An Admirer of Good Work.—We cannot with propriety insert your letter, asking for information as to where an albuminized paper can be obtained which will yield vigorous prints from weak negatives, inasmuch as we should not be able, without making invidious and unfair distinctions, to insert the answers to such a question. A highly albuminized and lightly salted Rive paper will generally possess the qualities you desire.

L. C.—You have too much top and front light, and the negatives are somewhat over-intensified. You have either not focussed perfectly, or your lens is not a good one. It is impossible to state the cause of the dirty looking streaks and spots, as they really look as if the prints had been smeared with a dirty cloth. Possibly scum on some of the solutions may have been the cause.

D. Grant.—We should say, from your statement of the case, that you undoubtedly have your remedy in a county court. All you have to do is to prove that the order was given, the order executed with reasonable care, and the goods delivered. For any one to decline to pay for goods made for him because he does not "like" them is not a reasonable or a legal course.

Pyroxyline.—So far as we remember, the soluble cotton employed by the Wothlytype Company was made by Schering, of Berlin. It is, we believe, kept by some dealers in this country. Try at Mr. Hughes's warehouse in Oxford Street. Mr. Brown, the Secretary of the United Association of Photography, now resides in Paris.

Croydon.—There is no such English work as that you describe. Mr. Carey Lea's "Manual," and Professor Towler's "Silver Sunbeam," are excellent and comprehensive. Dr. Van Monckhoven's *Traite General* is an excellent French work, but the same information is scattered through several works published in this country. Several of the shilling manuals are useful. Lake Price's book is useful. There is much useful information in Hardwich's manual; but it contains much that is useless and doubtful, and lacks much which ought to be found in such a work. No manual that we know contains full instructions for carbon printing and some other modern operations.

A Tipperary Boy.—If you object to the operation of camera printing for producing transparencies on wet collodion, you had better adopt a dry process, and print in contact with the negative. It becomes a little difficult to advise you, however, without knowing the nature of your experience. Have you worked any dry process, and which? If you are familiar with any dry process, contact printing will be simple enough; but if not, you will have first to select and master a dry process. For transparencies, perhaps the Fothergill process or the coffee process will be most simple and efficient; but it will be impossible to give you full instructions in this column. If you have preserved the volumes of the News for the last four years you will find full instructions in various articles; if you have not, we will refer to some specific articles. If you have our last Year-Book, you will find two or three articles on the subject. You need not apologize for troubling us; we have pleasure in helping you.

Eon.—Your mode of preparing the collodio-chloride at first was quite right; your error was in the mode of using it. We have always, in working collodio-chloride on glass, dried the film before a fire, and printed at once, as you will see on reading our instructions. If left to dry spontaneously, the free nitrate present crystallizes, and the minute crystals absorb moisture, hence the spots of which you complain. You may to some extent remedy this by decreasing the amount of free nitrate, and slightly increasing the amount of cotton; but in all cases spontaneous drying and keeping the plates for some time after they are coated will have a tendency to produce the results in question. Of course, when you added ether to alcohol in which you had dissolved nitrate of silver, precipitation was sure to take place, as the nitrate is not soluble in ether. We have no reason to doubt that your ether is perfectly good. It is not improbable that flake white may answer, but Mr. Durand informs us that he found kaolin answer best after trying several other pigments.

T. Erwin.—The portrait of Sir Shafto Adair is very good, and many of the others possess good qualities. In some, there is a little too much top-light, which, when there is at the same time a little over-intensifying, produces some degree of hardness. The tinting is neat and effective. We shall be glad to receive particulars. No. 3 is perhaps the best, and next Nos. 6, 9, and 11; No. 4 would have been very good if it had been slightly less intensified.

A Carbon Amateur.—Your difficulties have arisen from two or three causes we can trace, and possibly partly through the use of tissue some years old; for whilst it may be good after that lapse of time, it may very easily have undergone some change; but the first error you can remedy consists in immersing the tissue instead of floating it as Mr. Johnson recommends. Immersion causes both gelatine and paper to absorb much more water than floating, consequently making the drying slower; and slow drying tends to produce partial or complete insolubility throughout the tissue, which would account for almost all the other troubles which followed. In the next place, in Mr. Johnson's method of working, he generally blackens a space of about a quarter of an inch all round the negative, so as to surround the print with a band of unexposed gelatine, the presence of which materially aids the adhesion to the glass. The tissue at present made and used in Mr. Johnson's operations is thinner than that Mr. Swan used to employ. A thick tissue absorbs more water and is less suitable for attachment to a rigid and unyielding surface. Finally, a little practice is necessary to hit the exact point for removing the exposed tissue from the water and pressing it upon the glass, and much of success depends on this. The paper, when lifted away from the print in course of development, should not come away clean. It generally brings away with it a coating of pigment, which very often presents a negative image of the subject. The strength of the gelatine solution was that employed by Mr. Swan, and with which we found no difficulty. Samples differ a little, but scarcely so much as you suggest. Probably you did not use it hot enough.

A Member of the South London Committee.—A discussion of a matter so purely of a personal character cannot be continued in our pages. The matter is of really very limited interest. Every one connected with the South London knows all the facts to be as you have stated them, and they concern any one else very little indeed. The Society is so pleasant, harmonious, and satisfactory in its meetings, that it need not fear any evil from false statements and misrepresentations. You must see, moreover, that statement and counter-statement serve little purpose, and may be interminable; and if a person have made one false statement at first, he will not hesitate to make more false statements to excuse or justify his position; so you would gain no end by the publication of your contradiction.

Sylvanus Urban.—We are quite familiar with the puzzling condition to which you refer, and should be very glad to obtain absolute certainty in the preparation and use of baths. A neutral bath, as a rule, gives most of the blooming character to the negatives. Nothing more has been heard of Mr. McLachlan's method; but many persons have, we believe, worked more in the direction of neutrality since the publication of his paper. We shall be glad to hear of the successful completion of the new studio.

J. Osborne.—The difference in colour between the two prints is chiefly due to the difference in the negatives. That of which you prefer the colour has been a fully exposed negative, but not over-intensified, and is full of rich contrasts. The negative of the child is a trifle under-exposed. A somewhat richer tone would have been obtained by a little deeper printing. We should think that it has been toned in an acetate bath. There is, possibly, a difference in the paper, some samples more readily giving rich tones than others. 2. The strength of the silver bath will affect the matter somewhat, a weak bath failing to give richness. 3. A simple silver bath, varying from forty to sixty grains, according to the paper, will give you good results.

J. B. Best.—Only members of the Society, and in each case one friend, and the exhibitors, are invited to the Exhibition on Tuesday evening; but if you ask for us, we will arrange for your admission.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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THE PHOTOGRAPHIC EXHIBITION.

The progressive improvement manifest in the photographic exhibitions of the last two or three years is a fact as unquestionable as it is gratifying, and is, of necessity, a circumstance of profound satisfaction to those through whose instrumentality the revival of the custom of holding an annual exhibition was due. The collection of photographs now open in Conduit Street is, beyond all comparison, the finest which ever has been displayed under any circumstances. The number is sufficiently large, and contributed by a sufficiently extensive and varied array of photographers to constitute a thoroughly representative exhibition, so that the excellence of every kind, technical and artistic, manifested, is abundant evidence of the general advance and improvement amongst the devotees of the art, amateur and professional.

Amongst the many noteworthy features of the exhibition, there were two or three especially deserving of notice. One of the first which struck us was the fact that whilst the influence of Adam-Salomon was abundantly manifest in the mass of the portraiture, it was seasoned throughout, in greater or less degree, with individuality, each photographer stamping his own impress of style upon his work, and giving it especial characteristics. The massiveness, the richness, the brilliancy, the boldness of chiaroscuro which distinguish the photographs of the eminent Frenchman, are manifest in greater or less degree in all who have adopted the suggestion afforded by his pictures; but in addition to these qualities, more or less modified, many of the contributors have aimed at something besides, and in many cases with good results.

Foremost of those who, in adopting the Salomonesque suggestion, have produced pictures with essentially distinctive and grand characteristics of their own, is Mr. Blanchard. It is not too much to say that he exhibits some of the noblest examples of portraiture ever produced by photography. Immediately on entering the large room on the right hand, half a dozen large portraits almost startle the visitor with their unusual brilliancy, and, as on Tuesday night they bore no name, the almost universal question was, "By whom are these?" Striking as are these pictures at the first glance, they become more wonderful when carefully examined. The size is fifteen inches by twelve inches, and in the majority of instances the figure is large on the plate, half-length generally, in one or two cases three-quarter length. The richness, depth, brilliancy, and delicacy of Salomon are all there, with this largeness of style added. The rich depth and transparency are only equalled by the rare delicacy, modelling, and perfectness of texture, both in flesh and draperies. These elements, however, although conducing to artistic results, belong only to the higher order of technical qualities; but in the elements more essentially belonging to the artist proper the success is as great. The composition is, as a rule, exceedingly fine, and in some the expression and characterization are perfect. Finest in almost every sense, and, in reality, equalling any piece of portraiture we ever saw produced by any form of art, is a portrait of Mr. John Franklin, a well known artist. A noble and striking head, singularly resembling that of Charles the First, wearing the cavalier peaked beard and the moustache of that period, and having donned the medieval velvet and lace, rendered with all the qualities we have named in their most complete combination, the portrait is one which might have been produced by Vandyke, and is in every way worthy of him. Scarcely less perfect, and demonstrating that the success is not due to the adventitious aid of costume, is a portrait of a well-known *litterateur*, Mr. Crawford Wilson. Fresh and original in pose, massive and solid in modelling, admirable in texture, full of character, dignity, and intelligence, it is an absolute rendering of the man as known by his friends. The other pictures each possess in degree equal qualities. These, as well as some others in the room—we may especially mention some by Col. Stuart Wortley—admirably illustrate that slovenly photography and fuzzy definition are not necessary, as some people have imagined, to artistic portraiture, nor even to make photographic portraits resemble and recall the works of the old masters in painting.

A long array of exhibitors also show pictures of similar class, some in their own style equalling those of which we have been speaking, and many possessing very high qualities. Of these we may especially mention the wonderfully perfect likeness of Dr. Diamond, and that of Mr. S. C. Hall, by Messrs. Robinson and Cherrill. Both these pictures possess every quality which is desirable in portraiture, the expression and character being most admirably rendered, whilst in technical points they resemble and rival the finest mezzotint engraving. Messrs. Slingsby, Burgess, Briggs, Fradelle, B. J. Edwards, Fry, Noel Fitch, Cocking, Lafosse, and many others exhibit pictures of the same class, all well worthy of attention, to which we shall have again occasion to revert in detail.

Not less noteworthy than the features in portraiture to which we have adverted is the prevalence of combination printing in the present exhibition. Of primary interest, from its age, from its associations, and from its excellence, is Mr. Rejlander's "Two Ways of Life," of which one of the original copies, produced upwards of a dozen years ago, is exhibited. The photographic public to whom the work was then introduced were not sufficiently advanced to appreciate the method which Mr. Rejlander so admirably described before the Photographic Society, and the artist and his work received but scant appreciation. His work has, however, been germinal, and he may well be proud of the results exhibited in the present exhibition, and which may be regarded as the direct results of his own early effort. Foremost amongst what may be termed his pupils, although now himself the master and leader of numerous followers, may be mentioned Mr. Robinson, who, in conjunction with his partner, Mr. Cherrill, make a magnificent display in the present exhibition. The most important combination print they exhibit is one we have already noticed, "Over the Sea," which wins especial admiration from artists who examine it. About a dozen exceedingly beautiful landscapes, fifteen by ten, are combination pictures in so far as the skies are printed in, but not otherwise. To these we shall refer again, but may mention here that amongst them will be found the gull picture, which has excited so much controversy. Mr. Slingsby's "Milk Maid," and his "Early Summer," the latter a glorious landscape with figures; Mr. Hubbard's "StolenMoments," one of the most charming subject pictures yet produced by the art; Mr. Twyman's "Cornfield," another beautiful landscape with figures; and some others of the same class, demand a detailed notice, and we shall return to them again. Mr. Earl's fine landscapes on plates thirty inches by twenty, on which we shall have more to say, are also produced by combination printing.

Col. Stuart Wortley's cloud pictures on plates fifteen by twelve are amongst the notable features of the exhibition, both for their novelty and their rare poetic beauty. They consist of marine views representing sunrise, sunset, and moonlight effects; the fine effects of light and shade, and the grandeur of the clouds, give these pictures a solemn grandeur rarely seen in photographs.

It is interesting to note that many of the attractive pictures of the present display, if not absolutely by young men, are exhibited by gentlemen whose works were unknown to the exhibitions of ten or even half-a-dozen years ago, many of the exhibitors at which we are sorry to find unrepresented here. Besides these already named, however, we have some of the oldest and ablest representatives of photography. Mr. Mayall exhibits a most interesting collection of examples of the art, which practically illustrate the history of photography. A very fine collection of Daguerreotypes is well worth attention. Amongst these may be found the earliest examples of pictorial photography, by which we here mean the production of subject pictures by photography, and these are interesting for their own excellence, as well as from association. These were shown in the exhibition of 1851. A fine series of the *genre* pictures which were contributed to the exhibition of 1862 is also shown; and some admirable illustrations of that department of photography to which Mr. Mayall chiefly devotes his attention in the present day—we mean the production of first-class enlargements to be finished by the painter. Mr. Mayall's especial aim is now to secure the use of photography as a handmaid to art, so as to combine, in the highest class of portraiture, the most perfect fidelity with the highest finish. Of the painter's work, some of which resembles in delicacy the finest enamel work, we have not time to speak now; but we call the attention of the visitor to the rare excellence of some of the enlargements, which are absolutely untouched.

There are many fine examples of enlargement in the exhibition, plain and coloured. Mr. Rejlander's enlargement, finished in crayons, of a disconsolate little urchin who is "kept in" school for misbehaviour, is capital. Mr. Faulkner has a charmingly sunny coloured enlargement, a head of a child. Mr. Gillo has some fine enlargements on collodion, afterwards transferred to paper. These are excellent in colour and quality. The portraiture generally is good in this exhibition, and much of it is worthy of further detailed notice. Amongst the cards we may mention here that the visitor should not overlook a frame of charming little things by Rejlander.

In landscape work we miss the names of some old contributors. Mr. Bedford is not represented, nor Mr. Mudd. Mr. Vernon Heath, whose name seems to rise naturally in connection with those just mentioned, has, however, some exceedingly fine landscapes of Scottish scenery, delicate and brilliant, and, above all, distinguished by a true feeling of atmosphere. Mr. R. Manners Gordon exhibits some exquisite gems in the form of cabinet landscapes. Mr. Wardley has a number of exceedingly fine and very large landscapes. Mr. England's Swiss scenery is as perfect as ever. Mr. M. Whiting, Mr. Stephen Thompson, Messrs. A. and G. Taylor, Mr. Frank Howard, Mr. Sanderson, and others, exhibit landscapes, to which we shall return.

Most of the recent processes and novelties are represented. Some very fine examples of Albert's process should not be overlooked. The grand collection of specimens of carbon printing, exhibited by the Autotype Company, cannot be neglected; and, as illustrating the capacity of the process to, justice to portraiture, landscape, and reproduction, they should be well studied. Mr. Window exhibits examples of a new carbon process which he has recently patented, and which, from its fitness for producing enlargements, and the fact that it is a direct process involving no necessity for transfer, is likely to be of great importance. The examples exhibited—all enlarged portraits—are round and well modelled, showing no lack of half-tone. The examples finished in chalk are very fine, and suggest the especial fitness of this process for enlarged portraiture. Some good examples of Marion's carbon process are also interesting. Mr. Henderson's two frames of fine enamels are well worthy of examination. The examples of photo-crayon portraiture are not so numerous as might have been expected, Mr. Sarony himself not sending any; but there are some very good examples, of which we shall speak hereafter. Mr. Burgess is the only exhibitor of eburneum specimens, but his are very fine. Mr. Arthur Taylor's examples of printing with shellac and borate of silver will be examined with interest.

The bounds to our space and the brief time for examination limit us to a hasty glance at such specimens as most prominently attracted our attention. In our next we shall notice in more orderly detail many of the works exhibited. In the mean time, we may remark that the pictures fill the two rooms of the gallery in Conduit Street, and are, on the whole, well and symmetrically hung, covering the walls for a space comfortably within the reach of the eye, and also covering several screens and tables.

A large company of photographers and others interested in the art attended the opening meeting on Tuesday night, and were duly received by the president. The evening appeared to be a very gratifying one to all present.

HOW TO RECOVER A LOST NEGATIVE.

"How to recover a lost negative when you have a print thereof" is the title affixed by Mr. Rejlander to an interesting series of pictures hung in the present Exhibition, brief instructions being given on a card which accompanies the prints. Mr. Rejlander, as many of our readers know, is not only distinguished as the father of art photography, having in relation thereto for so many years "allured to brighter worlds and led the way," but he is exceedingly ingenious and full of resource in cases of emergency, and always ready to communicate for the benefit of others. In the series of prints now under notice a practical lesson is given in the reproduction of photographs. The subject is one of his well known *genre* pictures, with the title "Please give us a copper, sir!" The negative has been lost or broken, and the subject being still in demand, it was desirable to produce another negative. Every photographer knows that prints from a negative reproduced from an albuminized print the full size of the plate are generally immeasurably inferior to those produced from the original negative. The picture is flat, the definition is faulty, and the texture of the paper, being reproduced as perfectly as the image, produces great coarseness.

Mr. Rejlander deals with the difficulty in this way: he first reproduces the original whole-plate print in reduced proportion, a card size negative being obtained, and, by such reduction, the best definition is secured. From this small negative an enlargement on plain paper about fifteen by twelve is obtained; and this enlarged print is very carefully worked in monochrome—water colour, chalk, or charcoal being employed, this latter being most suitable. This part of the work requires, of course, great skill and care. The points requiring especial attention from the artist are to preserve roundness and modelling, to avoid bold hatching or coarse manipulation of any kind, and to retain the likeness with scrupulous accuracy. A bold, round, well-modelled picture having been secured, with soft gradations closely resembling those of photography, a negative reduced to the original size is obtained from it. If the work be skilfully done, it will yield prints equalling the original in every respect, and, if necessary, in some respects superior, as all visiting the exhibition may see by examining the series of prints in which Mr. Rejlander teaches the lesson.

ANOTHER COLLODIO-CHLORIDE PAPER IN COMMERCE.

We have been favoured with some examples of collodio-chloride paper, and a pamphlet describing its employment and the advantages to be derived from its use by MM. Sander and Risse, of Nordon, Ost-Friseland. This firm is the first of the many who have made use of collodio-chloride who have felt it necessary to recognize the discoverer and ask his opinion of their work. The pamphlet points out the different applications of the material manufactured by the firm, which is brought forward to compete with the leptographic, Carrier, Obernetter, and other similarly prepared sensitive papers. So far as we have yet had time to test the examples of paper sent to us, we have found it to possess many good qualities, and to be free from the defect which has marred the excellence of many samples of collodio-chloride paper; we refer to the tendency of the film to leave the paper. The example we have tried is quite free from this defect.

The pamphlet is interesting, as very systematically putting forward the claims of collodion paper:—

"Collodion paper, invented in the first instance by Wharton Simpson in London, and afterwards improved and introduced by Obernetter of Munich, possesses the following advantages over albuminized papers:—

"(*a.*) The operation of sensitizing is obviated altogether, inasmuch as the requisite amount of silver is already contained in the collodion film upon the paper.

"(*b.*) The pictures produced exhibit high lights of the most brilliant character; and, by reason of the glassy nature of their surface, present also a delicacy of detail which it is impossible to attain by the use of albuminized paper.

"(*c.*) The pictures upon collodion paper repose upon the surface of the thin collodion film, whereas an image upon albuminized paper sinks into the body of the material itself. For this reason it is extremely difficult, if not altogether impossible, in albuminized pictures, to prevent, by washing, the injurious action of the hyposulphite of soda in combination with the sulphur containing albumen; whereas, in collodion pictures, the operation of washing is perfectly effective, and no fear need therefore be entertained of their becoming bleached after long keeping.

"(*d.*) Collodion paper does not, it is true, print faster than albuminized paper, but it tones more rapidly; and, when toned in a suitable gold bath, which may be made for a lengthened period before employment, is capable of being invested with any desirable tint, from the lightest sepia to the deepest black.

"(*e.*) Collodion paper may be preserved for a considerable time in good condition if stored in the dark.

"(*f.*) It is of a more reasonable price than other papers; it does not break or become injured in the washing and toning operations; and may be manipulated with the same ease and facility as albuminized paper."

Dr. Sander next proceeds in his pamphlet to detail the mode of printing and toning the collodion paper, and to give the formula best adapted for the toning bath. The prints should not be printed of a much deeper tone than they are to possess when finished, and should be washed in the ordinary way before being transferred to the toning bath. The latter is thus constituted:—

A, either	
Chloride of gold	2 grammes
Distilled water	3 pounds
or,	
Chloride of gold	8 grains
Distilled water	12 ounces
B, either	
Sulphocyanide of ammonium...	40 grains
Distilled water	3 pounds
or,	
Sulphocyanide of ammonium...	160 grains
Distilled water	12 ounces

Solution A is added to B, both being stirred the while. The mixture may be kept till exhausted, provided it is stored in a cool, dark place.

If the pictures are required of a brown tone, they must be withdrawn from the gold bath when still of that tint; if they remain longer in the solution the prints assume a bluish-violet or blue and black tone. It is in the power of the operator, therefore, to impart to the pictures any tone he may desire. The pictures are fixed by being allowed to remain for six or eight minutes in solution of hyposulphite of soda (proportion one of hypo to ten of water), and are then washed for a period of three or four hours. They are subsequently laid between sheets of filter paper, trimmed to the proper size, and mounted, when yet slightly damp, by means of starch paste, upon cardboard. If the prints are allowed to dry before being placed upon cardboard, the operation of mounting becomes a more difficult one.

Besides the ordinary collodion paper, Dr. Sander likewise advocates the employment of what he terms collodion transfer paper, which differs from the former material in respect to the sensitive film, which, instead of being fixed firmly to its support, may easily be removed from the latter, and transferred to other objects. Pictures printed upon this transfer paper are manipulated in the same way as those upon ordinary collodion paper, and, when finished, are placed for a few seconds in hot water, when the film readily leaves the paper. The two surfaces have previously been cemented together with gelatine, and, as a small quantity of this substance still clings to the reverse side of the picture, the latter is carefully cleansed therefrom under water by means of a soft brush; the film is afterwards secured upon a sheet of transparent paper, which is inserted underneath it. This transparent paper is prepared by impregnating a sheet of good writing paper with linseed oil varnish diluted with turpentine, and, when dry, coating it with ordinary negative varnish; its employment is necessary in order to determine the position of the print upon the cardboard.

To transfer the picture to cardboard, the latter, with the transparent paper, is placed upon a sheet of filter paper, and coated with a solution of gelatine (twenty ounces of water to one ounce of gelatine); the transparent paper, with the collodion picture underneath, is then placed upon the damp card in its proper position, the superfluous gelatine is pressed out by the aid of a soft camel's-hair brush, and the transparent paper then lifted off. Any unequalness in the film disappears on drying. The finished pictures are placed upon wax-paper to dry, so that the gelatine upon them may not cause them to adhere to one another.

The transfer of pictures to opal or transparent glass is effected in the same manner. It should be remarked, however, that when transparent pictures are to be produced, the copies should be printed so deeply that even the highest lights are covered with a slight tint. A thin negative varnish is employed for protecting the plates.

The transfer collodion paper is prepared of so fine a quality that it is perfectly possible to obtain a good negative from a positive glass picture. An opportunity is thus afforded, therefore, for the production of negatives in a simple and efficient manner, and, what is also a matter of importance, enlargements of the most exquisite descriptions may be produced, such as it is impossible to prepare by any other process.

Pictures upon enamel and porcelain may also be prepared with transfer collodion paper. The film is separated by means of hot water, and caught up upon a sheet of filter paper; it is then placed in a bath of gelatine (as above prepared), and separated from the paper, if it does not otherwise leave the same, by means of a soft brush. A well-cleaned plate of porcelain is then carefully slipped under the swimming film, and both lifted from the liquid, the picture being smoothed down and its sides bent under the plate by a brush, or, better still, by the application of the tongue. In all transfers of this kind care must be exercised that no air-bubbles are formed between the film and the basis on which it rests. When dry, the picture is fixed by a tannin solution (one part tannin to ten parts alcohol), the same being applied to the surface by a soft brush; after a lapse of a few minutes the plate is washed under a stream of water, and, when again dry, it is varnished.

Photographs upon artificial ivory are produced in very nearly the same way. The picture, which should be somewhat larger than the glass plate to which it is transferred, is separated in the usual way by warm water, and then caught up upon a sheet of plate glass which has been well cleaned, and coated by means of a cotton tuft with a solution of wax (one part of white wax to one hundred parts of ether). The sides of the film are bent underneath the plate, and the latter surrounded on all sides by a margin of gum or glue paper, turned upwards so as to form a trough half an inch in depth. The inner paper wall of this trough is coated with a fatty compound (five parts lard to one of stearine) to prevent the ivory mass from adhering to the paper.

The artificial ivory is made by dissolving one-hundred-and-fifty grammes of gelatine in twenty ounces of warm water, filtering the same through flannel, and adding thereto thirty grammes of zinc white and fifteen grammes of glycerine. The mixture is kept heated upon a water bath for an hour, to allow the air-bubbles to rise and collect upon the surface; the latter are either separated by means of a spoon, or the mass is allowed to cool, and the upper portion separated by a knife, and afterwards again rendered fluid by warming in hot water.

The solution is poured with the utmost care (to prevent bubbling) into the trough upon the picture to the height of two lines, and when set, placed to dry in a temperature varying from 25° to 30° Cent. Before the picture is removed from the glass plate, the horny film is first covered with a solution of two parts of gutta-percha in one hundred parts of chloroform. The separation of the picture from the glass plate is easily effected by slipping a knife in between the two surfaces.

Besides the manufacture of collodion paper, Dr. Sander has likewise devoted some attention to the preparation of albuminized paper ready sensitized, and, by altering slightly the nature of the toning and fixing baths, is enabled to produce pictures equal to those on ordinary albuminized paper.

It is difficult to compare the comparative cost of collodion paper prints with those on albuminized paper, as the former material is sold in small sheets only; five thalers (or fifteen shillings) is the price of a quire of ordinary collodion sheets measuring 12 by 20, while for a quire of the transfer collodion paper of the same size, six thalers (or eighteen shillings) is asked.

THE PHOTO-RELIEF PROCESS IN PARIS.

Mr. H. Baden Pritchard gives an interesting account, in the last number of the Journal of the Society, of a visit to Asnieres to witness the operations of photo-relief printing at the establishment of MM. Goupil and Co., who are working the process largely. He says:—

It is very possible that at Asnieres not more of the working of the process is to be seen than at the seat of the Photo-Relief Company in Brompton; but there is this notable difference, which to cynical minds is of importance: in London the work is carried on under the auspices of the inventor, to whose interest it is that everything should appear in its best light, and that the manipulations should all seem perfect; in Paris, at Messrs. Goupil and Co.'s, no suspicion can be entertained on this score—that is to say, as to a desire to hush up any defects of the process—for the latter has simply been purchased in the way of business, and is worked methodically like any other ordinary branch of industry.

The establishment is under the direction of M. Rousselon (to whose courtesy I am much indebted), and at present capable of turning out 500,000 impressions per annum. The various operations, with the exception of those relating to the preparation and exposure to light of the gelatine, are carried on in one vast and lofty workshop, partitioned off into enclosures. In the printing department five circular tables are fitted up, each furnished with six presses; one workman is sufficient for each table, who, by causing the latter to revolve the sixth part of a circle, brings each press successively under his hands. A quantity of warm gelatinous ink is poured over the engraved plate, the paper is placed upon the ink, and the lid of the press is then shut down upon the paper. A short time is necessary to allow the ink to set; and, by arranging half-a-dozen presses in the manner described, an interval elapses between the application of the ink and the removal of the finished print. Most of the presses employed are fitted with a hinged lid, fastened by means of a hasp; but M. Rousselon states that the pressure exerted by this description of press is not always perfectly equal, and he contemplates, therefore, adopting a screw press, of which he has already some half dozen under trial. Moreover, so much work has he at present in hand, that five more tables are required to be fitted up at once. In the majority of the presses two pictures, about cabinet size, are printed at one operation, while the largest impression thrown off appeared to measure about a foot in length. The size of pictures to be produced depends solely upon the amount of pressure at one's disposal in pressing the gelatine matrix against the metal plate, and upon the size and evenness of the latter.

The obtaining of a perfectly uniform impression upon the metal plate is an operation of some difficulty, and has only been arrived at after great study. The metal used is an alloy of lead and antimony—or, one might say, lead hardened with one per cent. of antimony. The gelatine mould is laid upon a steel plate, and the sheet of alloy placed thereon, the latter being confined on all sides so as to be incapable of spreading out and thus distorting and otherwise injuring the engraving. Hydraulic pressure is then applied, and an impression obtained upon the alloy. M. Rousselon believes that an improvement will be effected by using a press recently invented by a French engineer, M. Deugoffe, in which the last squeezing action is developed by the introduction (by means of a fine screw) of a piston into a reservoir of oil, and the latter, being thus displaced, exerts a steady and uniform pressure. The operation of pumping in the ordinary hydraulic machine causes the latter to move by jerks; and particles of the metal becoming affected thereby after continual employment, uneven pressure is the result. The machine of M. Deugoffe is capable of exerting a pressure of one thousand kilogrammes on a surface two centimetres square, and is now employed in the Imperial arsenals for the testing of cannon

According to M. Rousselon's experience, the gelatine matrix will serve for the production of twelve engraved plates if care be exercised in their preparation.

The paper on which the prints are taken was at an early period of the process a subject of considerable anxiety. At first Mr. Woodbury was unable to procure a material suitable for his purpose under ten pounds per ream; but now a paper sufficiently good can be purchased for fifteen francs. The inks employed may be of any tint; but in making up the neutral colours, it was found necessary to add always a slight quantity of blue pigment to counteract the yellowish tinge imparted by the other ingredients. There is now, however, no difficulty experienced in regard to the supply of the various tints, which are specially manufactured for the purpose by an English house, Messrs. Newman and Co., of Soho Square, a firm which has given the subject special attention. Sometimes a sepia tint is used, sometimes bistre, sometimes neutral; but in all cases, the more it is worked (that is to say, the more frequently the parings and droppings are employed), the better the material becomes.

The pictures produced by Messrs. Goupil and Co. are, for the most part, reproductions from paintings and cartoons, more especially the former. The pictures are of small size, and, when mounted and finished, sent into the market to compete with ordinary photographs without any special attention being called to the manner in which they have been produced; they simply bear the word "photoglyptique," and are sold entirely on their own apparent merits. No portraits were being executed; but that was simply, said M. Rousselon, because no order for that class of photograph was at present in hand. At my request, however, some large heads were shown, displaying the various degrees of depth and vigour to be obtained; and these were, without exception, of the most promising character.

As regards the preparation of the gelatine mould or matrix, but little difficulty is now experienced. Printing by means of direct rays only is necessary, the exposure required being generally about the same as that of a silver print; the gelatine employed must be of a certain quality, and prepared with care. No photometer of any kind is employed, as the operators prefer to depend entirely upon their own judgment; and the subsequent operations of washing and hardening the film are so simple as hardly to necessitate special instruction in the matter.

In one division of the workshop, near the hydraulic presses, are stationed other machines used in facilitating the various manipulations. A small steam engine, always ready to be set going,and capable of driving a shaft running along the workroom, is used for various purposes; a circular saw for cutting and trimming the engraved plate to the exact dimensions of the press, a lathe for turning purposes, and a large magneto-electric machine, are all set in motion by this steam shaft. The electric machine is of the same description as those at present employed on the large Atlantic steamers for signalling purposes, and at forty centimetres distance gives a light about a fifth part as strong as that of the sun. By its aid engravings and paintings are frequently copied; but the pose is necessarily a somewhat lengthy one. Near to this machine was a powerful electrotyping apparatus, capable of furnishing in half an hour a copper deposit, or sheet, of considerable thickness, which, unlike in nature to the greater number of rapidly precipitated electrotypes, was of exceedingly fine quality, and quite free from all trace of coarseness; this apparatus was employed by M. Rousselon in perfecting a modification of the Woodburytype, of which I will now say a few words before closing.

That gentleman's endeavours are directed to transforming, if possible, a photographic portrait into a copper plate engraving capable of being printed by ordinary copper plate printers with greasy ink; and this aim he is sanguine of fulfilling with the aid of Woodburytype. A gelatine matrix is obtained in the ordinary manner; and to this is then imparted, by a secret method, a species of grain, which s afterwards conveyed to a metal plate. "Woodburytype, c'est la pression," said M. Rousselon, thus broadly defining the process; "and this I chiefly employ in elaborating my method." The specimens shown did not profess to be more than mere outlines, but they were still sufficient to warrant a continuation of the experimental research to which M. Rousselon has devoted himself.

Before leaving, the complete series of manipulations, with the exception of that of washing the gelatine, were successively demonstrated. The negative, the gelatine matrix, the impressing of the image upon metal, the trimming and fitting up of the plate, the adjustment of the evenly polished surfaces in the press, the actual printing, the fixing, mounting, and finishing of the pictures, were all shown one after another; but of all these the most marvellous was certainly the conversion of the flat dull metal surface into an engraved plate of exquisite delicacy and finish, a proceeding which, here accomplished in minutes, in the ordinary course is often a matter of years.

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HISTORICAL PORTRAITURE.

The use of photography in historical pictures is ably discussed by the *Manchester Examiner and Times*, in the course of an enthusiastic notice of Mr. McLachlan's memorial composition group of the portraits of gentlemen actively engaged in the Cotton Famine Fund. As this is a work upon which Mr. McLachlan has been engaged for some years, and has devoted to it much energy and skill, we are glad to learn that the result is so satisfactory, and shall hope for an early opportunity of verifying the high encomiums which the work has won from the local critic.

Speaking of historical paintings, the writer refers to the fact that a somewhat varied and wide range of pictures are usually classed as historical painting. For instance, he mentions the "'Finding of the Body of Harold,' 'the Miraculous Draught of Fishes,' 'Priam Supplicating for the Dead Body of Hector,' the 'Trial of Lord William Russell,' the 'Wellington Banquet to the Waterloo Heroes,' the 'Council of the Anti-Corn Law League,' and indeed almost any other class of work in which some kind of a story is told or illustrated, are all continually spoken of as 'historical' pictures. It is true that, in its widest sense, there may be a historical element at the base of all these subjects; but it is not this element, but the object of the artist and the method of treatment, which should determine its class in art nomenclature. The object of the historian is to narrate facts and deduce principles therefrom, as in Herodotus, Xenophon, or Gibbon; the object of the poet is to excite the emotions and gratify the fancy and the imagination. Hume's history of the reign of Richard the Third or Henry the Fourth is a very different class of literary composition to Shakespeare's dramatic treatment of the same subjects. Historical painting, strictly so called, ought, as far as possible, to deal with actual individual facts; to the poet or novelist it matters not whether fact or pure fiction forms the subject matter of his story. Hence it is the object proposed, and the artistic stand-point from which the subject is viewed, that determines whether a picture can correctly be styled a historical or a poetical one. No doubt it is difficult—nay, impossible—to draw an absolutely distinct line of demarcation between the two styles, inasmuch as any individual work may, to some extent, partake of both; but the main object or preponderating element ought to determine its class. The 'Trial of Lord William Russell,' by Sir George Hayter, is as nearly as was practicable a strictly historical painting, and yet, of necessity, the artist was compelled to draw largely from his imagination for many of the details depicted. His 'Marriage of the Queen,' on the contrary, was professedly a faithful historical record of an interesting event actually witnessed by the artist himself. Hence, in works where exactness as to fact preponderates over the emotional element is the great value of photography to what may with propriety be termed 'strict' historical painting, as well as to the student of science when he has to deal with material objects cognisant to the sight. The antiquary prefers a good photographic copy of (say) a newly-discovered dilapidated Roman altar to the most conscientious drawing by the cleverest living artist, simply because the subjective human element which of necessity enters into the latter, and from which results the greatest charm in 'high' or poet art, is absent in the former, and this is a most important condition with him.

"Mr. McLachlan, of this city, has for some years been labouring with the most unwearied assiduity to bring the photographic element to bear prominently in what we have termed strict historical composition. A single glance at the picture now on view at Messrs. Agnew's will convince the most sceptical that complete success has crowned his labours; nay, that he has actually distanced all his competitors in this species of photographic art effort. He has been most fortunate, certainly, in the selection of the artists in conjunction with whom he has produced what is unquestionably the finest picture of its class in existence. This is, doubtless, very strong language, and may, perhaps, be thought calculated to induce too high an expectation in the minds of some; but the work is of so unique a character, and has been so elaborately and conscientiously carried out in all its details, that no injury can accrue to its reputation from this source. The artistic design, or general composition and grouping, is the work of Mr. Frederic J. Shields, a Manchester gentleman, who has recently, and deservedly so, achieved a high-class metropolitan reputation. The photographs have all been executed by Mr. McLachlan, and the finished picture in oil, now on view, is the work of Mr. Arthur Hughes, a rapidly-rising London artist.

"Photographic groups containing many figures taken at a single sitting are, of necessity, formal and nearly destitute of artistic combination. In order to remedy this, a method termed 'double printing' has been adopted, by which process each individual figure is separately photographed, and afterwards transferred to its destined place in the artistically arranged group. This enables the photographer to exclude any single figure which may prove unsatisfactory either in likeness, pose, or expression, or even in its relationship to the other members of the composition. So unwearied in his labours in this respect has Mr. McLachlan been, that he has not scrupled, in some instances, to repeat an otherwise excellent photograph upwards of a score of times, notwithstanding the enormous labour and expense in travelling about the country to which this conscientious self-denial has subjected him. The photographs were afterwards enlarged to their present size, and transferred by tracing to Mr. Arthur Hughes's canvas. The first extraordinary result which attracts the attention of the connoisseur is the astonishing fact that the picture, as a whole, does not remind him of any photographic action at all, except, perhaps, in the almost uniform excellence of the several likenesses, and their marked individuality. To some extent this is undoubtedly due to Mr. Shield's admirable composition of the various groups, and the judicious foils and contrasts introduced. All this, however, might have proved abortive, had it not been for the indefatigable perseverance and true art feeling which Mr. McLachlan has brought to the task. It not only utterly casts into the shade all previous attempts at this class of photographic production, but, in spite of the mechanical and other difficulties attendant upon the experiment, it not only takes its place besides some of the very best purely artistic efforts at strict historical painting, but it completely eclipses nine-tenths of the works annually exhibited of this class. The ease of the pose and characteristic expression and action of many of the figures, considering the means by which this has been achieved, are truly marvellous. Every figure appears to be mentally occupied, in some form or another, with the business of the meeting. In the centre group Major Egerton Leigh is addressing the chairman—the noble earl whose recent demise has called forth expressions of regret from all political parties, on account of his many great qualities and the sacrifices he had made for what he considered to be the national interest; and, perhaps, no single act of his life will keep longer green in the garden of the nation's grateful memory than his pecuniary liberality, and, what was infinitely more valuable, his energetic personal labours on the executive committee which superintended the distribution of the funds raised by the national bounty for the sustenance of the compulsory unemployed operatives of Lancashire during the ever memorable cotton famine. A number of well-known gentlemen listen to the gallant Major's remarks, amongst whom is Lord Edward Howard, the expression of whose head is as earnest and sympathetic as it is artistic in effect and graceful in the pose. Towards the left is another group, with Mr. Wilson Patten as a central object, surrounded by a group of equally anxious listeners. The variety in the character and expression of this group is all that could be desired. Some of the figures are standing, including those of Lord Egerton and Mr. Hugh Mason. One difficulty of the most formidable kind Mr. McLachlan has grappled resolutely with and achieved success, and that is the perspective effect, both aërial and linear. The 'keeping,' as it is technically expressed, is, therefore, far in advance of anything that photography has hitherto produced, and to this fact much of the fine art character of the work may be ascribed.

"Mr. McLachlan wisely determined that the finished oil picture by Mr. Hughes should not be executed in colours, but simply in black and white, his great object being to obtain photographic negatives of various sizes, from which he intends to print copies for publication by the autotype or carbon process, the proofs from which are regarded to be as permanent as those obtained from ordinary engravings. By this means each subscriber will obtain a facsimile of the work, which will resemble the finest mezzotint print, which would not have absolutely been the case had the picture been in colours. Besides, unless the gentlemen had all individually sat to the artist, the complexions could not have been truthfully depicted, while the prints would have seriously suffered. We can entertain no doubt that the exceptional merit of the work, the important national historic event which it so faithfully records, and the popular character of the gentlemen represented, will secure to our enterprising citizen such a subscription list as will amply reward him for his skill, taste, labour, and large pecuniary expenditure. It has been suggested that the oil picture now on view should be secured, by subscription if necessary, for the new Town Hall. No doubt the character of the work, and the important local historical fact which it commemorates, would justify the council in purchasing it at once. At any rate, its retention in the chief building in the city, under any circumstances, is highly desirable."

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GRADATED BACKGROUNDS.

All careful observers and all good photographers know what a flat, ugly effect is given to a face when the light is evenly diffused all over it. There is no contrast, no gradation of half-tones, and, as we have said, the effect is flat and spiritless.

It is just so with a background of one unbroken tint, and our eminent artists have resorted to several means by which they can easily secure a gradation of tint upon the background. The first one we saw at it was Mr. J. W. Black, of Boston, whose method is, as near as we can remember, the following:—To get a little shadow on the top of the background, a stationary screen is suspended horizontally from the top of the background, partly over the head of the sitter, and raised and lowered by means of cords and pulleys. Another shadow is thrown in behind the sitter by moving a very dark triangular screen, about one-half the size of the background, which, by the way, must be white, or very light.

The figure is softened, and a light shadow thrown over it from the face downwards, with a small square pasteboard screen, with a semicircle cut out of one side, covered with black velvet. This is held in the hand and moved during exposure, covering the figure from one-third to one-half of the exposure, the time varying with the light, of course. In this way very pretty effects are secured.

Another method was suggested in the Photographic News, some time ago, by Mr. R. Gillo; viz.:—"Provide a background about four feet square, on a frame, with a cross-piece at the back, in the centre of which is a hole to allow the horizontal rod of the head-rest to pass. It will be seen that when the rest is placed against the head of the sitter, the face appears in the centre of the square. There will be found no difficulty in painting this small background with a gradation from dark on one edge to light on the other. Lampblack and whiting, with a little size, answers for the colour. When you have arranged the sitter, you can turn this around any way you please—light at the top, shading into dark below, or *vice versâ*, or a diagonal gradation, to suit circumstances and your own feeling. The different effects thus produced are astonishing. Sometimes the effect may be improved by shielding a part of the light from he background with a blind or curtain. From the fact of this background being so close to the head of the sitter, you often get a boldly cast shadow from the head or shoulders, which is very effective."

The standing of the background diagonally is also a plan by which very good effects may be had, as the part farthest away from the lens will be in deepest shadow, and *vice versâ*. We would suggest, then, that the background be swung by its centres in a framework, with a pin at each side for it to swing upon, and also at the top and bottom for the same purpose. The pins could be used to keep the background in place when not used as above. This plan would also enable one to have a background on each side of the frame, and it could be quickly changed at pleasure. Of course the backgrounds would be on the sub-frame, moving inside the larger, which would be mounted, as usual, on castors.—*Philadelphia Photographer.*

TRANSPARENT POSITIVES.

BY PROF. TOWLER, M.D.*

Transparent positives are required principally as transparent stereographs; also for exhibitions with the magic lantern or stereopticon, and for the decoration of windows with true pictures of natural objects on glass. Such pictures are the finest that can be made by photography, especially when carefully coloured; but they require much care in their preparation, and depend essentially upon the goodness and accuracy of the negative for their goodness and accuracy. It is impossible to produce from a poor and imperfect negative anything but a poor and imperfect positive, however the focussing may be varied; therefore, it will be seen at once how essential it is to make in the first place your negative as sharp and perfect as possible. It is for such work as this that a long-focus lens has a very great advantage over a lens of short focus, as may be seen by making an absolute experiment. Let us take, for instance, two pictures of the same size, of the same object, one with a lens of which the principal focus is three inches, and that of the other ten inches; let the picture be a square of three inches. Focus with the same amount of accuracy with either lens. On examination with a magnifying glass it will be observed distinctly that the negative taken with the lens of long focus is much more uniformly sharp from centre to side than the one taken with the other lens. This property is easily demonstrated mathematically. Hence it is that we recommend that the negative intended for solar enlargements or for copying shall always be taken with a lens whose focus is as long as compatible with the working distance of the object. Provided with such a negative, our next operation is to copy it into a positive, either on glass or on paper. Exclude all outside parts of the negative which are not sharp, either by reducing the size of the negative, or by covering the parts with a matt. To take copies from negatives on glass there are two methods, one by contact, as it is called, and the other by means of a copying camera, or a solar camera.

Copying by Contact.

For this purpose you must prepare a number of sensitive dry plates by any of the well-known dry-plate processes. Clean the plates, in the first place, thoroughly, then coat them with a film of dilute albumen, as previously recommended, and, when dry, coat them with a good collodion, and sensitize in the usual manner. When the colour is of a cream white, take each plate out and wash it thoroughly, either in rain or distilled water, and, when still wet, flow over the film some of the following solution of gum, sugar, and gallic acid, the mixture being that recommended by Russell Manners Gordon, which is about as simple and effective a preservative as can well be made:—

First Solution.

Gum arabic	20 grains
Sugar candy	5 ,,
Water	2 drachms.

Second Solution (with the aid of heat).

Gallic acid	3 grains
Water	6 drachms.

Mix the two solutions together, and filter through cotton or sponge. Cover each well-washed plate with this mixture carefully and completely, and then rear the plate; after draining, away to dry in the dark room, of course. For copying by contact the negatives must be varnished with the finest varnish possible.

Now, in order to get a copy of the negative on the prepared dry plate, place the former in the printing-frame in the usual way as you would for paper—that is, with the film side upwards—and upon this lay the dry plate, so that the two films are in intimate contact; but be careful not to rub the plates together, otherwise the upper film might be injured. Cover the latter plate with a black cloth, and then press down the spring back in its place. Cover up the front of the printing-frame until you have carried the latter to an open door or window, where the exposure can be made. The cover is now removed for about four seconds, either more or less, according to circumstances, and then replaced. This exposure will be about right. The plate is now carried back into the dark room and developed. The film is first made uniformly wet, and then the nitro-gelatine developer is poured upon so as to cover it; this quantity is then poured back into a vial, and two drops of the silver solution from the bath are added to it. This mixture now is the developer proper; cover the plate with it, and watch the development. The picture will gradually appear. The shades of the picture can be increased in opacity by adding more silver to the developer every now and then, until the intensity is as great as required. Wash and fix in the usual way. The tone of the positive is made very agreeable by means first of an acid solution of bichloride of mercury, and afterwards by a solution of bichloride of gold. Be careful not to tone too far. There are several other ways of toning glass positives. Wash again, and dry. Afterwards varnish the positive. This method is very expeditious and accurate on flat glass, but not on ordinary uneven glass.

(*To be continued.*)

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"SEALING UP" PICTURES.

BY CARL MEINERTH.

Daguerreotypes, ambrotypes, and all photographic pictures under glass, are not usually considered safe against the intrusion of dust or atmospheric influence unless they are what is termed "sealed-up" by a strip of sticking paper, gold-beater's skin, or court plaister, all around the edge of the picture and the glass cover. Frames with photographs are also covered on the back with a paper pasted all over the frame, to close it, so to say, hermetically.

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* *Philadelphia Photographer.*

Now this seems to be nothing but just the right way to "preserve" a picture. Let years go by, and let such preserved pictures come under the hand and eye of an "intelligent observer" amongst the photographers, for the purpose of copying or cleaning, and he will at once perceive that the change, the "destroying angel," which shows on the surface of the picture (not only on the opposite surface of the glass) was not created by dust or air, so carefully shut out, but by the very good intention and way of preserving it, viz., the dampness of the paste, left inside, unable to escape.

Dust or air will have very little, if any, effect on a well made picture; on the contrary, it has long been observed that photographic pictures retain their beauty better and longer if exposed to air. (Hypercritical critics will at once catch at the chance to inquire what I call "Air;" I refer them to the common sense of my readers.) But it is the moisture which invariably remains within a picture when pasted up, glued up, or starched up, which produces injurious consequences, not less so than it will produce fungoid growth (mould) in a microscopic slide carefully prepared, that is, sealed up before all the moisture is expelled.

This little bit of observation (having had photographs brought to me, which were "sealed up," even with liquid glue, made with nitric and sulphuric acids) I beg to submit to the consideration of the fraternity, as my conviction that it is better not to seal up hermetically any photographic picture.—*Humphrey's Journal.*

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ON PIGMENTS EMPLOYED IN ENAMEL PHOTOGRAPHY.*

THE practice of encaustic photography is becoming every day more wide-spread, and it is for this reason we deem it expedient to publish the following communications respecting the different kinds of pigments applicable in this branch of the art, which has been drawn up by one well experienced on the subject.

The enamel or flux is a colourless glass, and is mixed, according to will, with metallic oxides of various colours. Some of these oxides—oxide of iron, for instance—retain their colour during the operation of burning, while others only develop their tints when fused. The enamel serves only to fix the colours in the same way—in fact, as collodion is employed to retain an image. It must possess a brilliant surface, and of so solid a character as not to be capable of injury in an ordinary way. It may be prepared from white quartz-sand, feldspar, borax, saltpetre, carbonate of potash and soda, red lead, and oxide of bismuth.

According to the selection made from these substances, and the proportions employed, the flux will be of an easily or difficultly fusible nature. Sand and lime render an enamel difficult of fusion; whereas potash, feldspar, borax, oxide of iron, oxide of lead, and the different bases, produce an easily fusible flux.

In porcelain factories several descriptions of flux are necessary, but in encaustic photography only one description is required, and, as before stated, a colourless, easily-fusible glass is the material best adapted for the purpose. If fragments of this kind of glass are to be had finely powdered, no fusion is necessary, but otherwise the flux is prepared by melting together the following substances, viz.:—

Quartz sand	300 grammes
Red lead	300 ,,
Saltpetre	10 ,,
Carbonate of potash	150 ,,
Arsenious acid	0·45 ,,
Oxide of manganese	0·60 ,,

Of this flux material, when finely powdered, 3 parts should be taken to 1 part of the metallic oxides. Other methods of preparing a suitable flux are as follows:—

Flint (calcined and powdered)	3 parts
Oxide of lead	8 ,,
Borax glass	1⅓ ,,

Flint	10 parts
Red lead	38 ,,
Borax glass	40 ,,

Red lead	6 parts
Sand	2 ,,
Borax	1 part

We come now to the metallic oxides. Simple oxides may be employed as well as compound: oxides of chromium, iron, uranium, manganese, zinc, antimony, copper, cobalt, tin, and iridium; as likewise chromate of iron, chromate of baryta, chromate of lead, chloride of silver, purple of cassius, terra sienna, and yellow and brown ochre.

Red is obtained by means of oxide of iron, purple of cassius, and suboxide of copper.

Orange by means of red oxide of iron mixed with oxide of antimony.

Yellow by means of oxide of uranium, chloride of silver, chromate of lead, and oxide of zinc.

Green by mixing oxide of chromium, oxide of copper, and oxide of cobalt.

Dark blue by means of oxide of cobalt.

Light blue by means of a mixture of the oxides of cobalt and zinc.

Violet by means of oxide of manganese and purple of cassius.

Black by a mixture of the oxides of manganese, iron, cobalt, and iridium.

White enamel can be obtained by melting together—

Flint	3 parts
Potash	2 ,,
Oxide of lead	4 ,,
Oxide of tin	1 part

As soon as the mixture has been fused in the crucible, cold water is poured in for the purpose of breaking it up.

Of this mixture is taken	44 parts
Of white sand	25 ,,
Red lead	3½ ,,
Crystal glass (potash and oxide of lead)	2 ,,

This is pounded in an agate mortar, and rubbed fine with a little water; it is then transferred by means of a spatula to a well-cleaned copper plate, the superfluous moisture removed by means of bibulous paper, and dried and burnt in a furnace. When cold the surface of the enamel is polished, first by means of coarse and then with emery powder, being rubbed finally with putty powder.

For *black enamel* is mixed together—

Oxide of copper	2 parts
Oxide of cobalt	1½ ,,
Oxide of manganese	2 ,,
Flux	12 ,,

This is fused in a crucible, and then is added—

Oxide of copper	1½ parts
Oxide of manganese	1 part

The oxide of manganese employed should be perfectly pure, and free from any trace of sulphuric acid. The result is a perfect black; for photographers it may be somewhat too neutral, but this defect is remedied by a slight addition of burnt sienna or purple of cassius. A warmer pigment may indeed be prepared with:—

Oxide of copper	2 parts
Oxide of cobalt	3 ,,
Oxide of iridium	$\frac{1}{10}$ part
Terra sienna	1 ,,
Flux	18 parts

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* *Photographische Archiv.* See also "Pyro-photography," in the NEWS of the 23rd July last.

For *red enamel*, 1 part of calcined iron vitriol should be mixed with 3 parts of flux.

Purple is given by the formula:—

Purple of cassius	$\frac{1}{10}$ part
Borax	12 parts
Flint	1 part
Red lead	1 ,,

Flesh tint is obtained by mixing 1 part of red oxide of iron and 3 parts of flux.

Orange by mixing 1 part of basic sulphate of iron, 1½ parts of antimonic acid, and 8 parts of flux.

Light yellow by mixing 1 part of basic sulphate of iron, 2½ parts of oxide of zinc, and 11 parts of flux.

Dark green by mixing 1½ parts of oxide of copper, 10 parts of antimonic acid, and 25 parts of flux.

Light green by mixing 1 part of oxide of chromium and 3½ parts flux.

Dark blue by mixing 1 part of oxide of cobalt and 3½ parts flux.

Light blue by mixing 1 part of oxide of cobalt, 2 parts of oxide of zinc, and 9 parts flux.

Violet by mixing 3 parts borax glass, 3 parts peroxide of manganese, 1 part of oxide of cobalt, and 25 parts flux.

Grey by mixing 2 parts light blue enamel, 3 parts borax, and 28 parts flux.

Brown by mixing 1 part basic sulphate of iron, 8 parts of oxide of zinc, 1 part of oxide of cobalt, and 32 parts flux.

All these enamel colours are fusible at a red heat, and may be employed in the production of coloured photographs. With the exception of the cobalt blue, the antimony yellow, and copper green, the oxides are simply mixed with the flux, and finely powdered; the colours alluded to, however, must be first fused with the flux in a crucible, and afterwards reduced to a fine powder.

Correspondence.

MINIMS *versus* DROPS.

Sir,—In last week's News, does not the "Old Photographer" somewhat mistake the meaning of Mr. Wilson in relation to the testing of silver solutions, when he suggests that "drops" are not sufficiently definite, and that *minims* should be used? He points out that drops vary as they are poured from a large or a small orifice; but Mr. Wilson suggested using the same pipette for both silver solution and chloride solution, and, consequently, the drops would be of the same size. It is in the simplicity thus secured, I think, that Mr. Wilson's plan is so admirable.—Yours truly, Ag Cl.

[Our contributor the "Old Photographer's" aim was, we apprehend, to offer a caution against a common and sufficiently inaccurate method of measuring by "drops," as though a drop contained a definite quantity. In Mr. Wilson's method of using the same pipette for both solutions an approximate accuracy is gained, but not necessarily perfect accuracy, as drops of solutions of different density will vary in measure, even when dropped from the same pipette. It is no impeachment of the elegant simplicity of Mr. Wilson's method to say that minims are better than drops, as minims are just as easily measured as drops when a graduated pipette is employed.—Ed.]

PHOTO-CRAYONS FOR WINTER PORTRAITURE.

Dear Sir,—The approaching winter affords a favourable opportunity for again drawing attention to the great value of Mr. Sarony's invention, the photo-crayon portrait.

Having practically tested the success of the invention, and the results, both pecuniarily and otherwise, we can fully endorse all you have said in its favour, and we consider the profession are much indebted to yourself for your able advocacy of the merits of the invention, more especially from the fact that such advocacy has been made the subject of misconstruction, and has met with considerable opposition in some quarters.

It was our good fortune to take up the process immediately on its publication in your columns; we at once saw its utility, and we now consider it a most profitable and valuable adjunct to our business. In scarcely any instance have the photo-crayon portraits failed to please; in many instances large orders have followed the inspection of the first copy, and we look to the forthcoming winter for time and opportunity to produce large numbers of these portraits from our stock negatives. We have found so much success that we look upon every negative taken for a carte vignette for a further source of income from the new portrait.

It is quite true all photographers have not produced the Sarony picture in a satisfactory manner, but we cannot but think the fault must very much rest with themselves, and not with the system or the process. It has also been urged that special negatives are required. This is not so; good printing negatives only are necessary. We have even heard it asserted that, with rare exceptions, the inventor only had been able to exhibit successful and satisfactory results. Doubtless, at the Society's Exhibition on the 9th, numerous exhibitors will prove the fallacy of this notion. With this view we have sent to Conduit Street half a-dozen of our productions. We may mention that the negatives from which they are made are ordinary negatives, and we have been careful to let the process stand on its merits, by taking care that both the transparencies and negatives from which they are made are *entirely untouched.*

If you think a selection of these pictures placed in your office would be of service, we shall have pleasure in sending them. Our arrangements and manipulations are somewhat different to those detailed by Mr. Sarony, and if you think an account of them would be beneficial to your readers, pray command us.

In conclusion, we would respectfully press you to urge on the profession the great desirability of mastering the production of the photo-crayon portrait. They may rest assured that profit as well as pleasure will be the result.—Yours faithfully,

Liverpool, November 8th, 1869. Vandyke and Brown.

[We shall have pleasure in publishing the details of the operations of our correspondents, and also in hanging examples in our office. Our view of the great excellence of the photo-crayon process remains as we have constantly expressed it; and the winter is a season which affords especial suitability for giving attention to such a process, especially if artificial light be employed for producing the prints.—Ed.]

Miscellaneous.

Marine Glue for Joining Glass.—In a series of interesting articles on microscopic manipulations, in the *Chemical News*, the author gives some capital instructions for using marine glue in cementing glass, which will prove useful to our readers who may wish to manufacture glass dippers, &c. He says:—"For joining together pieces of glass, and for attaching metal to glass, the cement known as marine glue is usually employed. It consists of india-rubber, shellac, and coal naphtha, combined in various proportions, according to the purpose for which it is intended to be used. It is, I believe, difficult to make in small quantities; but there is no trouble in obtaining it, as it is sold by most microscope makers. As this cement will only adhere to hot surfaces, it is necessary to have some means of applying a steady heat to the pieces of glass, &c., to be joined; and as this cannot be done by means of the unprotected flame of a lamp, a hot plate is generally employed. This can be obtained, ready made, of the opticians; but a piece of thick brass plate, about six or seven inches long and two inches wide, placed upon one of the rings of a retort stand, will answer admirably; it can be heated by means of a spirit lamp or gas flame placed underneath. Supposing, for example, it is required to attach a ring of glass or metal to a glass slide, to form a cell for an object to be mounted in. The glass slide is placed upon the hot plate, first of all, at the part most distant from the lamp, to avoid breaking it by too sudden heating, and then moved gradually to the hotter part; the ring is also heated on the plate; a piece of marine glue is held on the point of a needle in a handle or other convenient holder, and rubbed on the heated glass over the surface to which the ring is to be attached. When a sufficient portion of glue is melted on the glass, care being taken to heat the glue sufficiently for free working, while overheating amounting to boiling is to be avoided, the heated ring is then lifted on with a pair of forceps, which, for this and all purposes where they are likely to be made hot, should be of brass, or else an old pair of steel forceps, which are to be kept for such uses The ring is then to be turned round backwards and forwards on the glass, to spread the cement equally, and then removed from the hot plate and pressed on a piece of wood, to expel superfluous glue, and allowed a little time to set; when set, but still warm, the greater part of the cement can be scraped off with a blunt knife, a process much more difficult if it is allowed to become quite cold. A number of cells can be attached and roughly cleaned at one time, the plate next required being heated while the one cemented is being cleaned off. When quite cold, the slides can be thoroughly cleaned with a piece of rag and a free use of methylated spirit; they should then be rubbed bright with a clean cloth. Some persons use liquor potassæ for cleaning off superfluous marine glue; it does this very effectually, but not so rapidly as strong alcohol, and the operation is a rather unpleasant one, as the alkaline solution first softens and then removes the skin from the fingers. The adhesion of marine glue and other cements to glass surfaces is much improved by grinding, which gives the cement a better hold than it would have on a polished surface, although marine glue will adhere well to polished glass, provided the surface is free from grease, which may be insured by a cleaning with methylated spirit. The adhesion of two pieces of glass cemented with marine glue is so perfect that they generally break in any place rather than at the joint.

Decomposition of Acetate of Silver by Iodine at a High Temperature.—M. Birnbaum, in the *Zeitschrift fur Chemie*, says that when a mixture of acetate of silver and iodine is submitted to heat, there ensues, at a comparatively low temperature, a very strong reaction, the products of which—partly vapours and partly permanent gases—were, by suitable means, condensed and collected by the author. Among the condensable vapours he found acetate of methylic ethyl boiling at 55°, and hydrate of acetic acid. Among the gases carbonic acid, acetylen, and, beside this, another carburetted hydrogen, were found. The solid residue of the reaction consisted of iodide of silver and some carbonaceous matter. The author enters into a very lengthy discussion as to the origin of the different substances found, but we cannot follow him therein, since it would require the reproduction of an enormous series of formulæ. When acetate of silver is heated by itself, a very violent reaction ensues, which sometimes even comes to actual combustion. The reaction yields acetic acid, and, among the gaseous products, CO_2 and marsh gas. The residue in the retort was found to consist of metallic silver and carbon.—*Chemical News.*

Proceedings of Societies.

North London Photographic Association.

A meeting of this Society was held on Wednesday evening, the 3rd inst., in Myddelton Hall, Mr. J. Cooper occupying the chair.

Mr. Barnett, the Honorary Secretary, said, that at a meeting of the Committee the present position and future prospects of the Society had engaged their attention, and in consequence he had drawn up the following paper, which he would now read, and a copy of which would be sent to each member. He then reported as follows:—

In calling your attention to the proposals and suggestions made at a special meeting of the committee, held on Wednesday, the 13th October, to consider the future of the Association, I think it right that some explanation should be offered of the reason for holding such a meeting, and the views of some of the members of the committee respecting it.

The North London Photographic Association was formed in the year 1857 by a number of amateurs, and its objects comprised the reading of papers, discussion and conversation on all points connected with the art, the exchange of specimens, experimental demonstrations, &c.; and for many years it stood second to no society in its efforts to develop the art it sought to foster. It ranked amongst its members many who have since become famous, and the meetings generally were crowded, and the interest fully maintained by the mutual interchange of experience or the desire to obtain it. The journals of that day being limited in number, and published at long intervals, the principal means of obtaining information was by attendance at the meetings of this and kindred societies.

This state of things is now entirely changed. The journals take the initiative, and by their liberality obtain the papers and information which would otherwise be made known through meetings only; and there are few to be found who for the mere pleasure of writing a paper are also willing to read it to empty benches to receive the usual "vote of thanks" without a word of discussion on its contents.

Hence many of the members feel that the mission of the Society is fulfilled, and suggest the wiser course of omitting all formality, and converting the Association into a club with occasional meetings of a strictly conversational character, and an annual distribution of photographs to the extent of the funds in hand. Others, again, differing from this course, would wind up the Association, and distribute the accumulated funds of the Society (about twenty pounds) in photographs to the members. The other course proposed is to hand the funds to another society in lieu of payment of entrance and subscriptions by such members as like to join it.

It was desired by the committee that the November meeting should be made special for the consideration of those suggestions; but the rules not admitting of such a course, it is decided that the meeting to be held on the 1st December be made special for that purpose; and, as it is desirable that the opinions of all should be obtained (if possible), it is hoped that each member who cannot attend will, before that day, inform the Secretary of his wishes on the subject.

The following are the proposed resolutions:—

1. That the Association be continued as an art-union and club, and that the funds in hand be appropriated to that purpose.

2. That, in the event of the dissolution of the Association, it is proposed that the funds be appropriated to the advancement of photography, by handing them to the Photographic Society of London in lieu of entrance-fee and subscription for any member of this Association who may join that Society during the present year, such members to be entitled to all the privileges of the Society to the end of its current year without further payment, provided the said Society is willing to accept the funds on such conditions.

3. That the funds of the Association be expended in the purchase of a photograph to be presented to all members who paid the subscription for the year 1868-9, and the Association be dissolved.

This paper was accepted as an embodiment of the views of the members present.

No other business was brought before the meeting, which was then adjourned.

Photographic Society of Marseilles.

The usual meeting of this Society was held on the 17th of September, M. Teisseire presiding.

The Secretary laid before the meeting Sig. S. Borlinetto's pamphlet on permanent photographs. The work will be analyzed and reported upon at the next meeting. The Secretary also exhibited specimens of albuminized paper from M. Mayer, of Paris, and samples were distributed amongst the members. The Secretary laid before the meeting a copy of the catalogue of gelatino-carbonized paper and albuminized paper coagulated by steam, sent by M. Marion.

Various explanatory letters were read from M. Marion. The paper was stated to have been prepared with a gelatine sold in the trade under the name of "grenetine," the purity of which and its solubility in warm water recommended its employment in preference to all other qualities of gelatine.

The Chairman said he had already made experiments with the material, which he considered possessed great superiority. It would save to operators in the carbon process the uncertainty which resulted from the employment of compositions made with other gelatines of a variable and often very imperfect solubility in warm water.

M. Vidal was glad to find M. Marion had taken this course, in spite of the rarity and consequent dearness of grenetine. It was most desirable that this method of printing should be generally adopted, and that object could only be effected when operators were furnished with trustworthy materials, capable of giving products of real artistic value. M. Marion appeared to have understood all the importance of this, as he had never ceased making new efforts to improve the quality of his prepared papers. In France they were indebted to him, and him alone, that the practice of the carbon process of photography is possible.

The CHAIRMAN announced that the meeting would then become entirely experimental, and that he was going to show in practice the employment of the papers presented by M. Marion. He then gave a practical description, which he accompanied by experiments. The operations were followed with interest by the meeting up to the final removal of the image transferred from the unpolished glass to the sheet of paper intended for its permanent support.

M. VIDAL also showed the employment of paper covered with coagulated albumen for printing direct, without recourse to any temporary support. This method is similar to that of the transfer upon glass, and it constitutes a very important improvement in connection with M. Marion's process. The impressed tissue is immersed in water at the same time with a sheet of coagulated albumen paper a little larger. When the two sheets are taken out of the water, and as soon as the composite paper is well stretched, the albumen is placed upon the composition, and pressed between sheets of blotting-paper, in order to get rid of the excess of liquid, and dry the two exterior surfaces. The effect produced is similar to that of a transfer upon glass, metal, or any such surface. It is left to dry spontaneously for about half-an-hour, after which it is immersed in a basin containing water at about thirty to thirty-five degrees (C.), the composition side uppermost. After the lapse of ten minutes or thereabouts, the gelatine will be sufficiently softened to admit of the two sheets being easily separated. The composition is then removed, leaving the image on the albumen surface. Owing to the great solubility of the grenetine, all excess of black is removed, and the image remains with all its tones. When the weather is suitable for exposing, an over-exposure is preferable to the reverse, as in the latter case there is no remedy, whilst a proof that has been over-exposed may, with the aid of hot water, be brought to the proper condition. The last operation is to plunge the proof, after it has been washed in cold water, in a bath of alum at three per cent., and afterwards in cold water by two successive washings. It is then left to dry. The experiment succeeded very well. There is only one serious drawback, and that is the reversion of the image. This is a difficulty in the reproduction of buildings and engravings, and M. Marion is endeavouring to remove it by the employment of pellicular negatives, which, like the wax paper negatives, may be treated on the one side or the other.

M. VIDAL showed some proofs of pellicular *cliches* which M. Marion had forwarded to him. They gave evidence that the object desired had been almost attained, and that a few more trials would give certainty. He wished to point out a modification which he thought should be made in this last method of M. Marion's. The albuminized paper did not please him, and he advised its being replaced by paper covered with gelatine rendered insoluble by alum. The process thus modified is more perfect. The insoluble gelatine succeeded admirably, and more artistic effects were obtained by means of it—proofs on a matt surface being more agreeable than images with shining surfaces, which were only pleasing in cartes or small proofs in general. The retouching on gelatine paper was exceedingly easy, whilst the albumen presented a greasy surface which was much less favourable. Lastly, the process, as a whole, was more homogeneous, as there were only two layers altogether—the paper on the one hand, and the gelatine on the other. The whites were less liable to turn yellow, which, at the end of a certain time, made the proofs on albuminized paper look so disagreeable. In all these points of view M. Vidal said the gelatine appeared to merit the preference over coagulated albumen; this, however, should not exclude the latter in cases where it might be useful. The firm of Marion might place at the disposal of the photographic community materials of both kinds, particularly by changing them according to the tints, as there was no reason why proofs should always be printed on white paper. The half-tinted, grey, yellow, blue, and rose admitted of delicious artistic effects, particularly in the reproduction of landscapes and monuments. On paper a little grained the glossiness produced by the thick black disappeared, or nearly so, and images were obtained which would compare with the most remarkable black pencil or sepia drawings, according to the nature of the composition. *Apropos* of the glossiness exhibited by smooth papers in the parts most thickly gelatined, he (M. Vidal) pointed out means by which this was made to disappear, and how a proof could be obtained similar to those on unpolished glass. The process, he said, was very simple:—After treating finally with alum, and the complete desiccation of the image obtained on paper, according to M. Marion, it is again put to soak until the paper is well distended, when it is applied in water upon an unpolished glass previously treated with stearine, all air-bubbles being thus avoided. The excess of liquid is got rid of by pressing it on blotting-paper, and it is then left to dry. The image, shining as it did, has now become dull, its surface is moulded on the ground glass, and during desiccation the reliefs of the gelatine are marked on the exterior of the vehicle. There is no trouble in separating the two surfaces after the paper has become dry.

M. VIDAL also stated to the meeting the result of his last observations. He said he had remarked that in cold weather, the pigmented gelatine would bear a larger quantity of bichromate of potash. He had not been enabled to obtain perfect images on grenetine paper with one and a-half per cent. of the bichromate, except by prolonging the exposure considerably, and he had found it necessary to strengthen the bath up to five per cent., in order to obtain the maximum of value in the shortest time. In general, he had remarked that the sensitizing bath required to be stronger for the smallest quantities of colouring matter. This showed the necessity of sensitizing in baths of different strengths, the compositions containing two, two and a-half, and three per cent. of colouring matter. Thus one and a-half per cent. of bichromate of potash would suffice for a composition with three per cent. of ordinary gelatine; but with two per cent. of grenetine there was no danger in using a bath of five per cent. The length of time during which the composition should be immersed, he (M. Vidal) said, was three minutes in summer time; but, as in cold weather the composition paper was slower in distending itself, in the winter it should be six minutes. In the process on ground glass it had been said that it was necessary to gelatinize the proof after its development by hot water, and washing it to remove all trace of colouring matter deposed from the image by the dissolving of the gelatine. This gelatinizing was important in order to avoid gloss in the half-tints, and also to prevent a too rapid desiccation causing the layer bearing the image to tear in its spontaneous separation from the unpolished glass. With regard to the latter, it was well to be careful not to press upon the proof for the purpose of giving it a supplementary layer of gelatine—a mixture of sugar, water, and gelatine, at a higher temperature than thirty-five to forty degrees—otherwise, from its strong construction, it might tear and destroy the image.

M. VIDAL announced that his new pamphlet, which was then finished, contained particulars of all the most recent suggestions and practical applications such has had been demonstrated experimentally. It would be an appendix to his former treatise, which was more theoretic.

The CHAIRMAN presented a collection of carbon proofs, which were a striking confirmation of what had been said of that process.

The CHAIRMAN and MM. JACQUEMET and VIDAL offered their co-operation to those of their colleagues who might feel disposed to commence carbon printing, so that their first steps might be surely directed. The aim of the Photographic Society of Marseilles was to neglect nothing in their efforts for the propagation of stable processes. They would strive resolutely against the continuance of silver printing. The Society considered the most important desideratum in the art of photography was the encouragement of printing by the carbon process or helio-engraving. But lately they could only wish to do this; it was now in their power.

The proceedings then terminated.

Talk in the Studio.

PHOTOGRAPHY IN SAN FRANCISCO.—The Special Correspondent of the *Standard*, writing from San Francisco, says:—"Art is not altogether neglected in our 'Farthest West,' as three well-filled and incongruously mixed galleries of paintings, sculpture, worsted and needle work, delicately arranged seaweeds, and photographs at the Fair will prove. Photography is especially well represented. We can boast in Watkins one of the very best landscape photographers in the world. His Yosemite and Columbia River views are worthy of Bisson Frères themselves. The still, clear atmosphere of California is very favourable to the practice of the art."

THE SEA-GULL PHOTOGRAPH.—A correspondent—Mr. J. M. Turnbull, of Edinburgh—writing on this subject, remarks that many instantaneous pictures of breaking waves, &c., have been produced without any suggestion that the results were obtained by painting-in or invoking the aid of the taxidermist; and, recalling Mr. Robinson's letter in April last, where he mentioned the fact that some gulls posed before his camera on a day when the light was magnificent, he sees no reason to doubt that this is simply a very fine instantaneous picture. He adds:—"About the same time, in company with a photographic friend, I had the pleasure of a day's work at the sea-side, where we thoroughly enjoyed ourselves; in fact, I might echo Mr. Robinson's words, 'The day was a glorious one, just right for our work,' &c. It was just one of those days on which instantaneous work was not only possible, but practicable. It was on such a day, Mr. Robinson tells us, the negative of the gulls was taken. Why, then, should we hear all the nonsense that has been written about the dodges, &c., by which the picture was produced? I, for one, do not wonder at the reticence Mr. Robinson (since the subject has been started) has shown in the matter. It has now become the fashion in matters photographic, whenever any party comes forward with anything new, that there is always some one ready to cry, 'Oh, we know all that before!' 'There is nothing new in that!' or some such cry as that; and so the party publishing a useful process or valuable paper gets small thanks for his pains. I hope, however, that Mr. Robinson and the many able men who communicate their ideas on photography and kindred subjects will not be deterred from giving their brethren in general the benefit of them by a few carping individuals whom it would be impossible ever to satisfy."

ROBBERY AT A PHOTOGRAPHIC WAREHOUSE.—We learn from our New York contemporary, *Humphrey's Journal*, that a few weeks ago the store of E. and H. T. Anthony and Co. was broken into, and $12,000 in Government Securities, and $225 in greenbacks, taken. The store was broken into through the sky-light, the safe forced open with wedges, and rifled of what was valuable. The bonds were all the property of Mr. Badeau, the junior partner; $5,000 of them were registered. One thousand dollars reward is offered for their recovery. It is a pity, our contemporary adds, that the thieves had not more consideration than to rob a photographic stock house. There are only a few left in New York, and these ought to be suffered to pursue their business unmolested.

To Correspondents.

⁂ THE PHOTOGRAPHIC EXHIBITION in Conduit Street will remain open, from nine a.m. till dusk, every day until the evening of next Tuesday.

B. and A.—The question as to the best method of taking interiors of drawing-rooms, libraries, &c., is a somewhat indefinite one, as so much depends on circumstances. We may answer generally that, as a rule, the best method is the wet process, and the best lens is one which gives straight lines and has a short focus. Sometimes the only available standpoint is the room itself; but where it is possible to take the camera into another room commanding a suitable view, that is better. Sometimes the camera may be placed outside, so as to take the room through its open window. The best view must entirely depend on the disposition of the furniture, pictures, &c.

R. S. H.—Your general plan is very excellent, and will require but slight modification. You need not bring the glass nearer to the floor than two feet. The proposal to have a little light in the south side, for occasional use, is good, as it can easily be excluded by blinds when not required. Do not use ground glass; but afterwards, if necessary, stipple with zinc white in mastic varnish. A warm grey, not too light, is a good colour for an interior. The glass you propose is very good.

T. H. (Sheffield).—The diameter of a lens affords no datum as to the size of plate it is intended to cover; it is the focus of the lens on which this chiefly depends. As a rule, a good portrait lens will cover a plate of which the largest diameter is about two-thirds of the focus of the lens. Other things, of course, modify this; we merely state a rough, general rule.

OXIDE.—Indian ink, or other suitable pigment, rubbed with water or a little dilute gum water, will answer. 2. Protosulphate of iron kept in a very dry place parts with water of crystallization, and assumes a white powdery appearance. It is not any worse for developing purposes.

TRANSPARENCY.—The plan you describe is the proper mode of going about producing enlarged negatives. The plan of producing a half plate transparency from a card negative, and a ten by eight negative from the transparency, is very convenient. The lens you mention will answer very well for the purpose. You must stop it down sufficiently to secure definition to the edges of the image. If direct sunshine fall on the negative, it is better to interpose a piece of ground glass between the negative and the light. It is important to a successful issue to secure a good, well-exposed, and well-developed transparency. A frequent cause of imperfection in the final negative is using a thin transparency, pretty to look at, but not suitable for producing a negative. 2. The toning and fixing bath to which you refer gives admirable tones, but whether the prints so fixed will be permanent or not is uncertain.

W. CROUCH.—There are some points, which you have omitted to state, which are of importance, before we can give you serviceable advice on the subject of lighting. You speak of your studio as of the lean-to form, but, from other allusions, it seems to be rather a sloping front light, it is, we presume, highest at the background end, and sloping towards the camera. If so, and only nine feet wide, it is about the worst possible form you could have. With a sloping front light, the only means of avoiding flatness is to cover half the roof with blinds, so as to secure some light and shadow; and in such a narrow room you will, by doing so, shut out much light. State more precisely the form of the room, or send a sketch of the elevation, and send us a few of your prints; we shall then be able to give you more valuable advice. 2. You do not state what colour your curtain is: nothing is better than velvet, if it be not of too dark a colour. Repp is a very good material, the best colour depending somewhat on the amount of light which falls upon it. A light green is not a bad colour. 3. The pinholes appear to be those due to iodide of silver. Dilute your bath with an equal bulk of water, filter out the precipitate which will be formed, then strengthen by adding the proper amount of silver. 4. We should prefer either of the two first mentioned.

J. GARNETT.—We fear that there is no method by which cards containing hyposulphite of soda can be made suitable for mounting photographs. The intervention of a film of printer's ink or other similar medium may retard the injurious action, but will not finally prevent it. Better sacrifice the cards at once.

H. BROWN.—As prints, the portraits enclosed, as examples of printing, are pretty good; that of the lady with the hat is best. 2. They are not procurable in this country as yet, we believe.

WANT-TO-LEARN.—The portrait is pretty good; would be much better if the background had been a little darker.

S. E. A.—The portrait you enclose is by no means bad. To secure more boldly marked relief, cover one side and a portion of the sky-light with a dark blind.

CHESHIRE.—The case you mention is very curious. We can only conjecture, as a possible cause, that some trace of the preservative has clung to the surface of the plate, which, although not noticeable before varnishing, becomes apparent after, by rendering the film less permeable by varnish.

CYMRO.—Newman's "Harmonious Colouring as Applied to Photographs" is the simplest and most useful work for your purpose. 2. Ridge roof; you will get your principal light from N.W., and sufficient from the other side to soften shadows. 3. There is no reason why the light should not be a good one.

A DUBLIN SUBSCRIBER.—You are confounding two distinct pictures. The photograph in which fifty sea-gulls are rendered is simply entitled "Sea-gulls," and consists of a sea view and gulls only. "Over the Sea" is a different picture altogether; in it there are only two gulls seen. The beauty of the picture does not consist in pretty scenery, but in the poetic treatment of a bleak sea view and figures. It is especially fine as an example of breadth.

SPECTRUM.—Professor Roscoe's book on "Spectrum Analysis," just published, is the best work on the subject.

G. RESTALL.—Thanks. In our next.

ERRATA.—In Dr. Van Monckhoven's formula for collodio-chloride of silver, as given by Dr. Vogel, for *grain*, in each place where it occurs, read *gramme*.

Several Correspondents in our next.

Photographs Registered.

Messrs. LLOYD and JEFFERSON, Southport,
Photograph of Rev. A. McLarea.
Mr. J. BARBER, Bidford,
Photograph of Armscot House.
Mr. T. ERWIN, Ballymeaa,
Photograph of Sir Shafto Adair.
Mr. W. T. HULLAND, Tamworth,
Photograph of W. Sharpe, Esq.
Mr. WELLSTEAD, Hull,
Photographic Group of the Prince and Princess of Wales, &c.

THE PHOTOGRAPHIC NEWS.

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THE ORIGIN OF THE COLLODION PROCESS.

"Palmam qui meruit ferat."

The question, "Did Mr. Archer discover and introduce the collodion process?" is once more raised by Mr. Tunny's recent address to the Edinburgh Society; and the generally recognized claim is more sweepingly disputed than on any occasion we have before noticed. That Le Gray had suggested, and that Mr. Bingham had tried, collodion, has before been admitted; but, so far as we remember, it has not before been asserted that Le Gray possessed claims to anything more than having published suggestions upon which the collodion process was based. Mr. Tunny, as reported in the *British Journal*, says, after referring to the want of sensitiveness in albumen plates, "This sensitiveness was found two years afterwards in the beautiful collodion process first given to the world by M. Le Gray, published in Paris in 1850, translated by Thomas Cousin, and published by T. and R. Willets, opticians, in the July of 1850." He then adds:—

> There has been a great deal of discussion as to who first suggested collodion in connection with photography. There cannot be the shadow of a doubt but that Le Gray was the first who published it. Mr. S. Archer's famous letter in *The Chemist* of March 1851 no doubt mentioned iodide of silver and iodide of potassium as essentials in his collodion process, but this was nearly twelve months after Le Gray had published his process, by which he had obtained pictures in the shade in five or six seconds—a sensitiveness scarcely exceeded at the present time. I have never doubted but that Mr. Archer was an independent discoverer, but, undoubtedly, priority of publication belongs to Le Gray.
>
> My first collodion was made from Le Gray's formula, and I had taken many pictures before *The Chemist* made its appearance in March 1851. Mr. Archer's letter gave a great impulse to photography; but for it, perhaps, Le Gray's process might have lain in abeyance for some time.

Now if this statement be accurate, there cannot be a doubt, we think, that Mr. Archer was not the discoverer of the collodion process. The fact that he rediscovered something which had been sufficiently definitely published to enable Mr. Tunny to practise the process long before the rediscovery had been announced would reduce Mr. Archer's claims to very small dimensions indeed. Mr. Tunny says he has no doubt that Mr. Archer was an independent inventor; but, if Mr. Tunny's narrative be correct, we fear that this can scarcely be admitted, inasmuch as whatever M. le Gray's discovery was, Mr. Archer seems to have been familiar with it, and distinctly states, in the preface to the first edition of his pamphlet, referring to the first use of collodion, that "the first publication in which it was alluded to was that of M. Le Gray, of Paris, and then *only incidentally, as a substance which might possibly be made available.*" Mr. Archer is here alluding to Le Gray's pamphlet of 1850, the work referred to, we presume, by Mr. Tunny. If, therefore, that pamphlet contained a definite formula, instead of an incidental allusion to something which might be used, Mr. Archer could not be called an independent discoverer, but would be rather something less honourable than we should like to believe.

We have used the phrase, *if Mr. Tunny's statement be accurate.* Let us, before proceeding further, explain. We do not for one moment impugn Mr. Tunny's veracity; we simply import into the consideration a recognition of human liability to error, and suggest, since authorities are in opposition, the possibility of inexactness of memory. In a matter, therefore, in which anyone undertakes to contravene facts which have entered into the domain of history, dated documents should be produced and quoted. To substantiate the position now assumed, Mr. Tunny should produce and quote the pamphlet published by M. Le Gray in Paris, in June 1850, translated by Cousin, and issued by Willat, in London, in July 1850. We have never been able to meet with a copy of the pamphlet in question. Has any of our readers a copy of it? Has Mr. Tunny now a copy? Failing this, will he be good enough to give the formula then issued by Le Gray, that it may be compared with that of Mr. Archer? For the definitive settlement of an interesting historic question, we think it not unreasonable to ask thus much.

In the absence of the pamphlet in question, let us glance at some other documents before us, which have a somewhat intimate bearing on the subject. In *Notes and Queries* of January 1853, this question was discussed when the subject was fresh, and Mr. Archer was in position to define his claims. In reference to a claim then advanced for M. Le Gray, Mr. Archer says, that in the pamphlet of 1850, published by Willat, the allusion to collodion "is there dismissed in three or four lines." Not only does he assert that the use of collodion was thus briefly mentioned by Le Gray in 1850, but he adds that in 1851 Le Gray does not seem familiar with its use as it is employed in what is now known as the *collodion process.* He says:—

> M. Le Gray gave no directions whatever for its application to glass in his work published in July 1851, wherein he alludes to it only as an "encollage" for paper, classing it with amidon, the resins, &c., for paper, which he recommends in a similar manner.

He further adds:—

> I again repeat, that the first time M. Le Gray published the collodion process was in September 1852, a year and a-half after my publication, and when it had become much used. It is obvious that if M. Le Gray had been in possession of any detailed process with collodion on glass in 1850, he would not have omitted to publish it in his work dated July 1851.

Mr. Archer writes thus with Le Gray's pamphlet of 1851 before him. In the same number of *Notes and Queries*, Dr. Diamond writes, in reference to the statement then made, that the process had been published by Le Gray in 1850, "Were the facts as stated," "it would deprive Mr. Archer, undoubtedly, of the merit which he claims;" but adds, that he has in vain "endeavoured to obtain a sight of the publication" of 1850, alleged to contain the details in question.

Further, we have before us a translation of a pamphlet by M. Le Gray, on the "Waxed Paper Process," published by Knight and Son in 1853, in the preface of which M. Le Gray says:—

> It is my belief that the future success of photography rests entirely on the paper process; and I cannot, therefore, too strongly recommend the amateur to direct his attention to this branch of the art. He will obtain upon paper as much finish and more artistic effect than upon glass. The pictures upon the latter are certainly very fine, but artistically hard, and give often a false appearance as regards the tones of the lights and shadows, not affording an impression true to nature. Pictures upon glass by the aid of collodion offer certainly some advantages in the rapidity of action and exquisite finish; this is of great importance in portraiture, but its fragility made me abandon it after the discoveries I made in 1849.

Now it is scarcely unreasonable to assume that M. Le Gray, writing thus, was not practically familiar with the capabilities of the collodion even at this date, at least a couple of years after it had become popularized in this country. We have before us at this moment a portrait negative of Mr. Henry Pollock, taken by Dr. Diamond, bearing this label: "From the original bottle of collodion brought by Mr. Archer to H. W. D., Sep. 21, 1850;" and the portrait is certainly neither hard, nor wanting in delicate gradation of tones.

In so much as we have stated, we have merely drawn inferences from documents to which we have access; but we can still further narrow the ground. In November 1860, M. Humbart de Molard contributed a brief historical note on the subject to the French Society, in which he endeavoured to obtain for M. Le Gray the credit of discovering the collodion process. After quoting from a treatise by the latter gentleman, dated 1849, in which he refers to the use of collodion—ten parts in a thousand parts of alcohol—as a sizing material for paper, he quotes from the appendix to a pamphlet by Le Gray, alleged to be dated June 1850, as follows:—

> I am working at the present time a process on glass with methylfluohydric ether, fluoride of sodium, and potassium dissolved in alcohol at 40°, mixed with sulphuric ether, and then saturated with collodion. I next produce a reaction with aceto-nitrate of silver, and I obtain a picture in twenty seconds in the shade. I develop the image with a very dilute solution of sulphate of iron with great rapidity. Ammonia, bromide of potassium exhibits very great variations in promptitude. As soon as my experiments are completed I shall publish the results in an appendix. The application to glass is very easy.
>
> The same reagents employed with albumen and dextrine also give very prompt and excellent results.
>
> I have also experimented with a fucus, which seems to me very promising.
>
> I hope soon to be able to obtain a portrait in three or four seconds.

Was this pamphlet published in this country, and is this the process referred to? If so, does it contain any details which would enable any one to work it with any hope of practical results? And is it in any, except in a very remote, degree allied to the photographic process as at present understood, which was worked by Mr. Archer and Dr. Diamond in 1850, and published in March 1851 by Mr. Archer?

The facts can only be decided satisfactorily by documentary evidence. Will Mr. Tunny—or can any of our readers—aid English photographers in coming to a certain conclusion by the production of a pamphlet of June 1850, by Le Gray, containing a practical formula for the production of photographic pictures? It is tolerably clear that in the paragraph quoted by M. Humbart de Molard, no instructions of practical value are given. It is not stated whether the *mélange* mentioned as containing collodion was employed dry—as were all the materials at the time, such as albumen, gelatine, dextrine, mucilage, &c.—or wet. It is not stated how the fluoride of silver, which is soluble in aqueous solutions, was retained in the film when formed in a solution of aceto-nitrate of silver. No proportions are stated for any of the preparations. If these were all the data published, it would be most interesting to know how a practical process was formulated from the vague allusion to experimental operations we have quoted.

Once more, as regards Mr. Tunny's statement, let us be well understood. We do not hint a doubt of his good faith. We know him to be one of the oldest and most experienced, as he is now one of the most ingenious and enthusiastic, of the photographic fraternity. But in a matter which disturbs the public faith in one of the generally accepted facts of photographic history, and which tends to destroy the claims of one now dead, but to whose memory photographers believe they owe a large debt of gratitude, it is important to know whether the evidence rests on the memory, during nearly twenty years, of even the most trustworthy of narrators, or upon accessible documents the authenticity and accuracy of which can be verified.

◆

SHORTENING EXPOSURES IN THE CAMERA.

MR. BLAIR's article on acceleration of exposures, which will be found on another page, deserves reading with careful attention. He revives the idea, which has before received some attention, but which has been very little discussed, of reducing exposure in the camera by submitting the sensitive film to the general action of light out of the camera. Amongst old Daguerreotypists this was more than an idea: it was a secret of the profession, which became, however, a recognized practice. We have often exposed a prepared Daguerreotype plate to the general action of light for a second, when a very rapid exposure, for a baby or moving object, was required, and with unquestionable advantage, a sufficiently satisfactory picture being obtained in two or three seconds in a light which would have ordinarily required an exposure perhaps six times as long.

The idea upon which this practice was based was scarcely so comprehensive as that of Mr. Blair. The chief aim, as we have before explained, was to get rid of the inartistic blackness and harsh contrasts produced by under-exposure. The cases where it was most available and yielded the best results were portraits of fair children in white or light clothing. It will be seen that in such cases no blacks were required in the picture at all, the deepest shadows being only dark grey. As the black polish of the Daguerreotype plate, like the bare glass in the collodion picture, furnished the deep shadows, it was possible, with the class of subjects to which we have referred, to materially shorten the exposure in the camera, by allowing the whole plate to receive sufficient light to produce a uniform grey, instead of retaining a uniform black, as the starting point of the operations. The operation might be likened to producing a drawing in white chalk on a grey board; the result would not be so brilliant, because the contrasts would not be so vigorous, as a skilfully produced drawing with similar material on a black board, but a more harmonious picture would be produced, with much less labour, on the grey, than would be possible on the black.

About a couple of years ago, Mr. Gage, an experienced American portraitist, patented a method of working out a similar idea in conjunction with collodion negatives, to which, from various causes, the mode in question had never been applied. The object of Mr. Gage was to utilize a minimum portion of diffused light to secure his end. Having excited and exposed the plate as usual, or exposed a shorter time than is usual, the lens was turned towards any dark dead surface for a short time, so that the whole of the plate was subjected to the weak radiations which were reflected from this surface. A screen of about eighteen inches square, covered with thick black woollen cloth, with a handle about two feet in length, was found convenient for the purpose, and was held in one hand whilst the cap of the lens was removed with the other. The screen was kept in motion, so that no image of its texture should be formed on the plate. The time of the exposure to this dark surface varied, according to circumstances, from one-fourth of the time of the original exposure, to half the time. Instead of submitting the exposed plate to this action of light, under some circumstances it was recommended to submit the excited film to treatment before exposure; whilst in some cases a combination of both methods was advised.

The effect was stated to be in all cases an increased harmony, or blending of crude contrasts, the effect of blending being most complete when the operation was effected after the image had been impressed. The especial claim upon which the advantage was based was, that the half-tones and impressions from weak radiations were strengthened most; that whilst the lights were not altered, the half-tones, the lack of which in a picture produces hardness and want of harmony, were strengthened in a marked degree, and thus the defects of short exposure or of harsh contrasts in the subject were modified or overcome.

At the time we published the account of Mr. Gage's patent, we tried the method proposed, and with some unquestionable advantage. We found, it is true, some loss of brilliancy, inasmuch as a slight greyness prevaded the deepest shadows of the picture; but we found that the sacrifice of brilliancy was relatively much less than the gain in harmony, and, in describing the results in these pages, we then said:*—"Curiously enough, it is the middle tints in the picture which are most affected by the treatment with light; there is a considerable increase in the development of the half-tone, without much additional deposit on the deepest shadows, and consequently it is possible, by judicious management, to secure a palpable advantage in certain cases with a scarcely appreciable loss. We think that this apparent anomaly can be explained, and we shall probably, at a future time, have some remarks on the subject."

On reading Mr. Blair's article it will be seen that in addition to the advantage gained by modifying harsh contrasts, he points to a more philosophical reason for the use of diffused light on the sensitive surface as a means of reducing the time of exposure in the camera. We have the more pleasure in calling attention to Mr. Blair's argument because it coincides with the views, unmatured and never published, which we had formed when we wrote the above remarks upwards of two years ago, promising an explanation of an apparent anomaly.

Mr. Blair suggests that a certain amount of the initial force of light is expended, not in producing an actual image, but in overcoming a certain degree of *vis inertiæ*. It is well known that the degree of force necessary to keep a body in a state of motion once attained is less than the force required to commence that motion when the body is in a state of rest. It is not necessary to go into theories of the formation of the latent image, but, for illustration's sake, suppose the sensitive surface to consist of molecules at rest, and the image to be formed by bringing them into motion by the action of light, the idea is, that a certain amount of light action would be expended in the initial effort to overcome the state of rest before an actual result capable of being utilized was produced; that if the exposure were stopped just when sufficient light action had been expended to disturb the state of rest, and no more, the molecules would resume their original position, and a developer would produce no effect on the plate. If this be so, he thinks that, before exposure, sufficient light might be admitted to the plate to overcome the *vis inertiæ* of the molecules, and the state of rest being overcome, then all the action of light in the camera is expended on the actual production of an image. As the amount of light necessary to produce this initial effect on the sensitive surface would be insufficient to produce or determine any actual reduction without the further action of light, no appreciable injury to the shadows will ensue; all parts of the plate upon which light has not acted in the camera will remain as free from deposit as they do under ordinary working conditions.

The notion of a voluntary exposure of sensitive collodion plates to diffused light will doubtless startle most photographers who have a wholesome fear of fog before their eyes; and there cannot be a doubt that if such a plan were adopted, the utmost exactitude in conditions would be imperatively necessary; but it cannot be denied that the idea is ingenious, and well worthy of consideration. We commend, therefore, a careful perusal of Mr. Blair's paper to all our philosophical and experimental readers.

THE PHOTOGRAPHIC EXHIBITION.

The first impression of the exhibition of photographs now open in Conduit Street is fully confirmed by subsequent visits. It is in every way a great success, and has been daily attended by large numbers of delighted visitors. Instead of closing it on Tuesday, as was at first contemplated, it was felt desirable, in consideration of the constant influx of visitors, to keep it open until the end of the week. Our metropolitan readers have, therefore, at the date of our publication, still two days for further visits, as the exhibition will not close until Saturday afternoon at five o'clock.

As we devote a large space in this number to the reproduction of the opinions of the outside press on this exhibition, we shall not enter into much detailed comment of our own on the subject this week, but shall make one or two brief general observations.

It is noteworthy that this exhibition is essentially one of pictures rather than of processes. There is very little apparatus shown, and scarcely any photographs the primary intention of which is to illustrate any question of a technical character. The general aim of the contributors has been to exhibit pictorial results, and in very few instances is there even an incidental allusion to the process employed. Even where a technical point is to be illustrated, something of pictorial value is shown. Mr. Belton, for instance, contributes various prints to show the excellence of his matt paper and the richness of its fine velvety blacks; and in every instance the picture on this paper is interesting in itself, besides satisfactorily illustrating the good qualities of the paper. Another point of interest is the fact that whilst many pictures are shown with debateable qualities, there are fewer really bad photographs than we have ever seen in any former exhibition.

Another fact illustrated, especially in portraiture, is a certain independence of treatment in every way. As we have said before, the Salomonesque suggestion is largely manifest, but it is always with a difference. The mode of framing close up without white margin introduced by M. Salomon has been largely adopted, but with various modifications, some of which are very effective. An interesting and instructive study of the frames, and of the effect of framing, may be made by the photographer who will investigate the subject with a discriminating eye. Take the effective novelty introduced by Mr. Blanchard with his large portraits, sixteen inches by twelve. There is no white margin: a gold flat of an inch broad next the picture, but the frame proper is an ornamental moulding about a couple of inches broad, of good but somewhat severe design in some dark wood—probably walnut—unpolished. The effect is exceedingly fine, and adds much to the richness of the wonderful depth of tone in the pictures. Near to these is a collection of fine large heads—possessing much character, depth, and force—by Lafosse. These pictures are surrounded by a white margin and India tint, and although this mode of mounting is often very pleasing and effective, it is here altogether unsuitable and unsatisfactory. The massive tones of the pictures are rendered heavy and opaque by the amount of white. The bold and forcible style of portrait with a prevalence of shadow is spoiled when surrounded with white margin; and, by contrast with Mr. Blanchard's pictures and mode of framing, these suffer considerably. A rich gold moulding is very effective with Mr. Robinson's and Mr. Slingsby's portraits of the same type, and the excellent examples by Mr. Briggs are well displayed in a fine rich moulding of polished oak with a gold flat inside. Mr. Blanchard's ten by eight portraits have a black bead and gold flat which is very satisfactory; whilst some very admirable portraits of the same class by Messrs. Fradelle and Leach suffer from the insignificant character of a frame of poor gold bead. Some of the landscapes with a broad gilt matt gain considerably by the absence of white entourage. The mode of mounting and framing of many other pictures will be found instructive matter for attention and study; but it is unnecessary to enter into further detail: we simply aim to direct the attention of our readers who may yet attend the exhibition to an interesting and useful subject of observation.

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* See Photographic News, June 7th, 1867.

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ACCELERATION OF EXPOSURES.

BY WM. BLAIR.

Photographers, like other people, often get into a rut, and cannot get out of it. So many great authorities have from time to time laid down the *dicta* that such and such rules must be observed, that it requires some daring innovator—one who seems capable of setting everything like law and established order at defiance—to look at the matter in a sceptical spirit, or suggest the slightest modification. We are thus sometimes crushed down under a weight of authority so that we cannot move, and to attempt to do so might be deemed the height of folly. Two classes of people, however, have an advantage here, and manage sometimes to scramble out of the rut in which the rest of their brethren are jogging along; viz., those that do not know what has been said and done by others before them, and those who do not care, but desire to test everything for themselves as far as they can. Accident also—or what passes under that name—will sometimes jolt us out of the rut.

The above introductory remarks may perhaps raise an expectation that some marvellous and unheard-of novelty is now to be announced. So far good. Without some such expectations the reader would perhaps not read on; but if his expectations are unreasonably high, he must not complain of a little disappointment. If he supposes that I am to call in the aid of more light, very well; let us talk over the possibility of such a thing in a reasonable way; but if he fancies that I am to propose flooding the inside of the camera with light, or illuminating the dark slide with tapers to assist the sun in impressing the latent image upon our sensitive plates in the act of exposure, then he will require to be reined up a little, even although he is, perhaps, on the right scent. In getting out of a rut we must take care not altogether to go headlong off the road.

Hitherto, I believe, our dark slides have been kept very dark, and the inside walls of the camera as black as the inside walls of our chimneys. There shall be no light there, nor anything that will reflect light, has been the long settled rule of construction and use. I propose to enquire whether this rule may not, in certain circumstances, be advantageously modified.

Let us take a case of ordinary carbon printing (but, for the present experiment and illustration, the pigment used should be white, so that the impression may be visible). On withdrawing the tissue from the pressure-frame it is seen to be under-exposed, and it is impossible to replace it against the negative for further exposure. The faintest details are slightly touched with the light, but so slight that, if we proceed at once to wash up, some of these are sure to be lost in the finished picture. To prevent this the whole surface should be flushed with light for a little, whereby the faintest impressions will be strengthened, and the whole picture may be secured. This is often a useful expedient when the *cliche*, whether a positive or negative, is rather strong in the contrasts. Well, there must be a reason for this. The slight additional exposure does not greatly affect those parts which have been well exposed already through the clearest parts of the glass, but it makes a great difference comparatively in those parts which have been but slightly impressed. The latter may, in a second or two, have their actual exposure doubled, and will thus be so much better fixed; whilst those parts which, from the density of the *cliche*, have not been touched at all by the light, though they will no doubt be now slightly impressed, will still be less so than the parts fomerly printed in the pressure-frame, and may be washed away. An after-exposure of this sort reduces the contrasts between the highest lights and deepest shades, and, if not carried too far, tends to secure the whole picture.

Let us apply the principle detected in the foregoing experiment to the taking of a negative in the camera. It has always been thought that the very first and faintest impact of white light on a sensitive surface produces a photographic impression, although it requires a certain amount or quantity of it to bring the latent image within the reach of our developers. It seems to be a matter beyond all doubt that feeble impressions are made by weak pencils of light, which are not utilized at present, because they cannot be developed. But a little more light, even of a diffused nature over the whole plate, might give these first and weak impressions just that addition which is necessary to let the developer get hold of them, and carry them forward to a visible impression. Let me illustrate the matter in this way: Suppose I plant a sensitive plate in my camera, and let in a weak ray of light upon one spot of it, and it requires an exposure of *three* seconds to make a developable impression; the part impinged by the light becomes, of course, visible under the developer, but the rest of the plate remains clear glass. Now I repeat the experiment with another plate, but expose to the same weak ray for only *two* seconds. The impression made would, in the case supposed, not develop to a visible image. But I diffuse light over the whole plate of the same strength as the former weak ray for another second. It is evident that I have now brought up the part previously exposed for two seconds to the point of development, while the rest of the plate is still not injuriously affected by the light, and would remain clear glass. Indeed, to repeat the experiment for a third time, a small portion of the plate might be exposed in the camera for only *one* second, and then the whole plate might be exposed to light of the same strength diffused over its whole surface for *two* seconds. Even in this case the portion first impressed would still develop, and the rest of the plate would not. Here, then, I think, we have a well ascertained principle, which ought to be turned to some practical account, as it will be seen that it is possible, by the cautious use of diffused light, to accelerate exposures considerably, however sensitive our chemicals may be, so long as our developers are unable to reach the very faintest impressions of light. Great sensitiveness has, no doubt, already been attained by various processes. The sensitiveness of the chemicals, the strength of the developers, and the illuminating—or, rather, actinic—power of the lens, have each and all been pushed to their utmost, or are in course of being so, to secure rapidity of exposure, and every advance in these departments has been hailed as a valuable addition to photography. I now desire to call in a fourth power to aid us in the same direction, and which, if judiciously handled, cannot fail, I think, to be found of service, so long as absolute instantaneousness is not otherwise reached, and that is the use of weak diffused light, to strengthen faint impressions.

Various ways will at once suggest themselves in which this weak light may be used. I recollect noticing, some time ago, in one of the journals, that a patent had been taken for holding a piece of black velvet in front of the lens for a short time after exposure for a portrait or other picture. It was said to give softer negatives, and I believe it would, upon the principle that I have been explaining. But it appears to me that if the nature of the operation was understood by the patentee, it was a foolish thing for him to confine his patent to that particular way of attaining the effect desired. It is very apparent that, by slightly opening the door of the dark room and letting in a *little* diffused light after the plate was taken from the dark slide, the same effect would be produced. When this matter first dawned upon my own mind, the plan that I adopted to give effect to it was to line the front part of the inside of my camera with *white* paper, so as to produce a slight diffused light within the camera during exposure; but I did not carry the white paper entirely back to the dark slide, in case of producing lateral or partial reflections too powerfully. This is a matter, however, that would naturally fall to be regulated by the shape of the camera and the field covered by the lens. Another way of attaining the same end may be to have the window of the dark room not entirely proof against actinic light, so that the plate might be subjected to a slight stimulation during development.

I have not been able to carry out any complete set of experiments to test the theory above propounded as I could have wished. It would, of course, have been more satisfactory that I could have done so, but it is not within my power at present, and all I can say in the meantime is, that I have taken some negatives with my white-lined camera without noticing any bad effects from that source, but it was not under circumstances to enable me to say whether I had gained much in the shape of acceleration.

If the above theory be true, it may help to explain some other things which are at present involved in doubt. For instance, there seems to be a great variety of experience in regard to the keeping qualities of negatives after they have been exposed, but not developed. It is believed that the impression wears off in the dark; but some can develop them after months have elapsed, and others cannot after a few weeks. Is it not possible that this difference of experience may arise—in part, at least—from the manner in which they are kept? If kept in *total* darkness, they are likely to fade soonest. If kept in a box or in a room where they have occasionally had the benefit of a little diffused, is it not quite possible that their vitality and power of endurance may be thereby somewhat enhanced? This appears to me to deserve further attention.

I may here further mention that I have also lately been attempting the introduction of white paper, &c., within my dark slides in contact with the sensitive plate, with a view to the further acceleration of exposures; but as the principle of operation involved in that case is somewhat different from that above adverted to, I must defer the explanation of this to another opportunity.

[Since the above was in type Mr. Blair writes as follows]:—

Dear Sir,—Since despatching my paper on "The Acceleration of Exposures" by means of diffused light, I happened to take up Mr. Wharton Simpson's Year-Book for 1868, for another purpose, but, on glancing over it, I noticed amongst the Photographic Patents of 1867 this entry: "*Improved Mode of Harmonising the Lights and Shadows of Pictures.* F. B. Gage. The method intended to be protected was a plan of submitting a sensitive plate to weak diffused light, after or before taking the picture, to permit short exposures without black shadows." This appears to be the patent that I had before seen noticed, and it is evident that the patentee had not clearly understood the value of diffused light in bringing up weak impressions, for it was indifferent to his purpose whether the exposure of the plate to diffused light was *before* or *after* exposure in the camera. All he wanted was harmony, and that might have been obtained by using ground glass plates, as well as by veiling his plates with diffused light.

I further notice, however, in the same annual, a short article by Mr. John Eastham, from which it appears that he had used diffused or reflected light for a similar purpose, and had lined his camera with white paper, as I have done. As far, however, as I can gather from his remarks, his views on the subject seem to have been much the same as Mr. Gage's, for he says: "I was at first led to try it (that is, the white lining) through finding that bromo-iodized plates exposed little by little to the light were much more sensitive than those plates which were prepared in an entirely darkened room with yellow light only. The shadows are not so hard and black." So far as the acceleration or shortening of exposures is concerned, the use of diffused light on the plate beforehand, or in course of sensitizing, must be mere waste, if not positively injurious. My recommendation is to prepare or sensitize the plate in the usual way in a well darkened room with nothing but yellow light, but afterwards, either during exposure in the camera, or subsequently when the image has been impressed on the plate, to give it the benefit of a little more light. I believe in this way some of the slower processes may be brought up almost to rival some of the quicker ones.

I am glad to see that Mr. Eastham's experience goes to attest the *fact* that diffused light within the camera really has an accelerating effect in the development. This I had anticipated, but had not had an opportunity of testing to my satisfaction.—Yours, &c., Wm. Blair.

Bridgend, Perth, November 15th, 1869.

A VISIT TO THE PHOTOGRAPHIC EXHIBITION.

BY W. T. BOVEY.

A believer in the prophetic accuracy of omens must have regarded it as a lucky incident that the late photographic exhibition should have lighted on the all-important ninth day of the usually murky month of November, for is not that a day of ancient and modern renown, which, in every borough, is dedicated to bell ringing, band playing, trumpet blowing, civic processions and municipal feasting, gorgeous illuminations, and parochial bonfires; a day when political lions leave their dignity at home, and are content to sit like ordinary mortals at the festive boards where rest huge dishes of the tempting "green fat" that delighteth the hearts of stout aldermen and bustling liverymen; a day when prime ministers and their subordinates give their pet measures a brief airing, and my Lord Mayor glorifies, as he himself is duly glorified? In short, it is a day devoted to luxury and enjoyment; to cold winds and drizzling mists; to showy parade and much enlivening hustling and bustling; when squallor and splendour, mirth and misery, elbow and jostle in an heterogeneous crowd of gaping humanity. I would have my readers bear in mind that the incident I have briefly alluded to forms part and parcel of a *fixed* period; but our photographic exhibition is, to all intents and purposes, a moveable feast; hence the reason why its inauguration may be considered as giving rich promise of a profitable session to the London Parent Society, seeing that its opening meeting chanced to fall on the glorious ninth.

It was at that sacred hour when my Lord Mayor and guests were feasting, that I turned from noise and bustle into the comparative quiet always to be found in Conduit Street. For several minutes I had been mentally engaged in calculating the probable cost of the lavish waste of gas, and I had just come to a conclusion that the sum total would have carried a larger amount of warmth and gladness into the hearts of the starving poor than any amount of rampant gas-light loyalty could impart pleasure to the Prince of Wales, to whom the illuminated devices were dedicated, when my companion awakened me from my reverie. I was before the famed number nine, whose wide-open portals promised a hearty welcome to all who chose to enter therein. I entered the hall, and inserted my name on the visitors' list. "What name?" inquired a polite functionary. "Oh, Mr. Bovey!" he shouted in stentorian voice which startled me; and ere I could recover from my confusion, I was shaking hands (I fear mechanically) with the worthy President of the London

Photographic Society, whose cheerful countenance and kindly attuned voice, I trust, betokened a ready forgiveness for the awkwardness that surprise had created.

Rest the matter as it may, on entering the exhibition hall humiliation gave place to feelings of intense delight, when a cursory glance around the walls assured me that the conspicuous exclusiveness that formerly characterised the works of the masters was no longer so strongly marked and evident; that name and number had to be scrutinized to distinguish the masters' works from those of their clever and diligent pupils. "Photography has indeed made a marvellous stride during the past year," was my involuntary ejaculation when a closer survey of the pictures shown had forced upon my mind an impression that a really bad photograph was not to be found in the exhibition.

Despite bad times and the croakings of wailing prophets, photography is patiently scaling the domain of art. The great pioneers have already accomplished their noble mission, and are now found shoulder to shoulder in the ranks. This fact is most encouraging, as it offers a convincing proof that he who pauses, whilst on life's march, to speak of perfection achieved, is but an egotist who calls *to-day* perfection, forgetting that there will come a to-morrow, and *yet* a to-morrow, for progress to labour and move onwards. I have no desire to indulge in idle rhapsody or enthusiastic anticipations, but I without hesitation assert that he who has lost faith in the capabilities of photography is a mournful realization of a fact, that man may live with the world running far ahead of him.

I just now expressed an opinion that there was not a really bad photograph to be found among the pictures exhibited. I here assert that, as far as technical excellence is concerned, English photographers have good cause to congratulate themselves that in the present state of the art they remain unconquered. Would that I could add that in every case the evidence of high manipulative skill was accompanied with proof of art feeling and art culture. As in books, so in pictures: no feeling can be conveyed to the heart of the reader or observer except the feeling is first aroused in the breast of the author or artist. No art feeling can be successfully blended with a picture that is untrue to the rules of art, which are as much the embodiment of nature's laws as are the rules applied to musical harmony. Certainly, the lackadaisical school of art may practise *art*, but art without feeling might be likened unto an icy tenement from whence the soul has fled for ever.

In the photographic exhibition there were many attempts at art; there were but few, comparatively speaking, examples of feeling. I am not expressing this, my opinion, as a reproach; on the contrary, I am delighted to find that so many are bravely essaying to clear out of the old rut, and to such I say, study well art principles, but do not forget to imbibe art feeling; you have already created the skeleton, strive now to give it flesh and blood. Above all, impart to it an impassioned soul. Remember that true artists never aim at creating works to astonish; they draw their inspiration from their own hearts, and strive to awake the echoes of kindred sympathies.

It would be beyond the pale of my present object to review the pictures exhibited in detail; this much, however, I *will* venture to assert: M. Salomon is beaten on his own ground; and Mr. Robinson is now reminded by his pupils that the laurels tremble on his brow, and that his powers must be more than human if he keeps his place in the race of improvement. Let all, however, join in paying due homage to the pioneers of our art. It was they who ran while others were creeping. It was their example which awakened dormant skill. It was they who sharpened the weapons, and with those weapons they will most assuredly be beaten. Mental power is finite, but accumulation of minds makes it almost infinite. A tiny zoophyte being is in itself an insignificant thing, yet, in numbers and generations, it can erect continents. So with the progress of civilization. The living work and die, but the mark of genius is felt long, even though it be beaten. I venture on recording my impressions exactly as they exist on my mind, for, depend upon it, a new era is opening on photography. The child of a few short years of being is emerging into manhood. New schools are being founded, and mutual congratulation must give place to honest criticism. Those who have filled the honourable position of masters must give place to unwearied successors who have not lost strength in buffetting with the storms of difficulty; whose formulæ and other etceteras have not cost them years of experiment and laborious research; who have been made mechanical photographers with an expenditure so slight that their minds have been at leisure to cultivate that description of knowledge that leads to artistic excellence.

Perhaps the strongest proof of the correctness of my impressions concerning the future of photography is best given by a little gem of art exhibited by Mr. Hubbard, entitled "Stolen Moments." I have before had occasion to speak of that artist. I was glad to hear it said by many competent judges that "Stolen Moments" is a sure stealing off from the lower school. Who will join in playing truant? Who will yield up the cowardly thought that photography has seen its brightest day, and, in an ardent pursuit of improvement, will consent to banish that enervating word *impossible* from their vocabulary.

With much and growing interest I watched "Stolen Moments" through its every stage of development with great satisfaction. I am now enabled to state that I have received permission from Mr. Hubbard to tell my readers all I know about the matter. I therefore purpose availing myself of the permission at an early date, when it will be my business to show that collodion, silver, and iron, when judiciously mixed up with brains, form a mixture that is capable of producing pictures as surely as it can build up riddles and "gulls."

THE PRESS AND THE PHOTOGRAPHIC EXHIBITION.

As it will doubtless be interesting to many readers to learn the views of the recognized organs of public opinion upon the representative examples of their art now exhibited in Conduit Street, we reproduce here the principal opinions of the press which have been published. It is scarcely necessary to say here that, although some able remarks on the subject of photography and photographs will be found in the articles quoted, we can by no means endorse all the opinions expressed, some of which are not borne out by the pictures to which they refer.

(From the *Times.*)

Those who wish to see the highest expression of photography at its present stage have an excellent opportunity in the free exhibition opened on Tuesday by the Photographic Society at 9, Conduit Street. It will remain open for a week only. The general verdict seems to be that, both for diversity and degree of excellence, it is decidedly the best exhibition of the Society.

It includes more than 400 examples. The subjects include landscape and architecture at home and abroad, foliage, skies, seas, portraits, human and animal; examples of natural history, of natural size or enlarged, are almost the only important application of photography not represented.

Processes are as various as subjects. We have wet and dry-plate work, gum gallic, and coffee, eburneum and carbon processes; examples in small and solar camera enlargements; pictures on all manner of surfaces, matt paper, and enamel and glass; transcripts from nature, and "combinations" of sky and landscape, figures and background, in which direct rivalry with pictorial art is ventured upon.

The exhibition has two sources of interest: one for the working photographer, the other for the public and critics, who judge results, not on photographic merits, but by the pleasure they give. We notice the exhibition less from the photographic than the artistic point of view.

We see nothing here to induce us to change the opinion we have before expressed in notices of photography, that its true function is in the record of facts as they are, not as arranged for pictorial effect. With full recognition of the beauties of Mr. Robinson's work, and of the good taste which has guided his "combinations," and with such clever examples of photographic picture-making as many of Mr. Rejlander's subjects and Mr. Hubbard's "Stolen Moments" here, fresh in memory, we still feel that photography has an altogether distinct function from fine art. If, indeed, the theory of some of our painters were true, that the painter's work is simply to represent what he sees before him, then the photographer might claim to be put in the same rank with the painter, and above him. For what painting could record the multitudinous detail of the figure friezes and ornaments of the Buddhist temples of Southern India like these admirable photographs of Captain Lyon's? But if, as we hold, the distinctive function of the painter's art be not transcription, but new creation, the condition of which is the subordination of the objects represented to certain mental states and acts of the artist, it is evident that photography is excluded, for the Sun *will* paint what he sees as exactly as he can. We may arrange the subjects for him to a certain extent, and choose the point of view for him; but we can do no more. But the more we arrange his subjects, the more lifeless they will look; the more they will show that dreadful dead-alive-ness which belongs to the *tableau vivant* as distinguished from the picture. And this for the simple reason that everything in a picture requires to be modified, as well as arranged, by the artist in the process of painting, whereas the photographer can only arrange, and not modify, or only modify within the narrowest limits. At the same time, we quite agree with both the theory and practice of Mr. Robinson as to the importance of the photographer's cultivating his artistic faculty in the choice of points of view, conditions of light and shade, and arrangement and pose of sitters. Such combinations as those of Messrs. Robinson and Cherrill (23 to 28), in which appropriate skies are very dexterously wedded to well-chosen landscape subjects, are within the limits of modification possible to the photographer. Everything depends on the judgment with which the combinations are made, but when this is sound, as in these examples, the effect is excellent. But in such a large composition as Mr. Rejlander's "Two Ways of Life," Messrs. Twyman's "Cornfield," or Messrs. Robinson and Cherrill's (212*), we submit that the limits of photographic modification are past, and that the result is a *tableau vivant* in all the objectionable sense of the word.

The limits of costuming and posing in the case of sitters are to be determined only by good taste and artistic instinct or culture. Here we have examples of much that is excellent, not a little that is intolerable in this way. In the former category we venture to place Colonel Stuart Wortley's three large heads (181-3), treated, two *a la* Holbein, the third *a la* Reynolds. The middle head of the soft-featured dame in a French hood is charming. On the other hand, most of the heads in the large frames exhibited by La Fosse (76) and those by Blanchard (72, 243, 244), seem to us to have fallen into errors of excess, in chiaroscuro or expression. Indeed, we see nothing among the heads, "treated" with an evident eye to pictorial effect, so thoroughly satisfactory as some of the portraits in which no attempt has been made to force an attitude or get up an expression, as, for example, many of Ashdown's, and the three charming female heads, in carbon, on glass, by Bullock, at the end of the large room, which for grace and refinement seem to us to bear the palm from all the portraits here. A very exquisite example of coloured photography, the half-length of a fair-haired girl, however (by Locke and Whitfield), contests the supremacy of charm with those three heads of Bullock's.

In this class of work much interest attaches to Messrs. Mayall's enlarged portraits, coloured in oil, including one of the Hon. Reverdy Johnson, another of the Poet Laureate. In both the likeness is marked, as might be expected, but the painter's part of the work has a hardness in the case of the late American Minister, a waxiness in that of the poet, which prevents either from satisfying an exigent critic. A smaller half-length of Gladstone is much better.

In the enlarged work there is nothing better than the head (2) of a sulky school girl, "Kept In," by Rejlander, in which the background is supplied by hand, the figure being photographed on glass, as in the case of Bullock's three beautiful heads already mentioned.

Among the large number of good works in landscape, photographers will probably assign the palm to J. T. Earle's view of the Vale of Neath (62). The definition of the multitudinous detail of boulder, rock, and foliage is wonderful; but the composition is not agreeable. Mr. Earle's waterfalls are equally wonderful for photographic perfection, and better in composition. The same merits and demerits may be awarded to Mr. Earle's large rock views opposite, and also to the "Fairy Glen," by G. Wardley. But among the landscapes, for exquisiteness of half tone, and the charm resulting from happy choice of subject and point of view, there is nothing here to be set above Mr. Vernon Heath's frame of subjects from "The Trosachs" (69), and a series of small subjects on one of the screens, including some beach views with wrecks, and an exquisite little picture of a Highland subject with a lassie crossing a brook, by Russel Gordon. For pictorial beauty, and for giving all that photography can give of the delight of art, this little photograph seems to us the gem of the exhibition. Mr. England's Swiss views (136-138) are also very fine examples of photography, and so are Mr. Rouch's views on the Riviera (265), Mr. M. Whiting's Border views on the Esk (721), and E. C. Buxton's Highland and Norse subjects. Mr. Vernon Heath's studies of skies (216) are of the highest interest. Taken instantaneously they represent the forms and massings of clouds in windy weather with an exactness which the painter cannot hope to rival in dealing with such evanescent and changing subject-matter. These sky studies, wisely used, should be of great service to landscape painters. Not so Colonel Stuart Wortley's effective but rather tricky series (111-12, 152-54) of moonlights made out of sunlights. They are very clever, but there an end. They can only mislead the painter.

Of all the photographs here, none approach in value and interest as records, and none exceed in photographic excellence, the series of views of the Buddhist temples of Southern India, by Captain Lyons. Few even of Anglo-Indian residents know of the wonders and wealth of strange architecture comprised in the southernmost triangle of our vast Indian Empire. Before Mr. Fergusson wrote his history no student of architecture had within reach any trustworthy account of even the general character of those wonderful works. But no means except the camera can give any idea of the amazing richness and variety of detail lavished on their sculptured decorations. This series of Captain Lyons is the revelation of a new world of architectural form and ornamentation.

Another point of great interest in connection with photographic progress and practice illustrated by this exhibition is the application of Swan's carbon process, in the hands of the Autotype Company and their licensees. Here is the real key to the problem of durability, so long the desideratum of the photographer. By this process is obtained a result placed *quâ* photograph beyond the possibility of chymical alteration, and as durable as the colour employed in it. The impression consists, in fact, only of gelatine and the pigment chosen for printing—chalk, sepia, Indian ink, carbon, or whatever other material best expresses the effect sought in the reproduction. Already, by this process, in the energetic hands of Braun, of Dornach, all the best drawings of all the great galleries of Europe have been made accessible at trifling prices, so perfectly reproduced that in many cases it taxes the skill of the practised connoisseur to distinguish reproduction from original. In spite of the difficulty of establishing a position on ground already occupied, this is the process, it would seem, which must ultimately oust all other modes of photographic printing. A good illustration of the marvellous fidelity with which it reproduces the work submitted to it is to be seen here in two frames of carbon autotypes from fine and rare engravings after Sir Joshua Reynolds. But the real scope of the process can only be appreciated by a visit to the Company's head-quarters, No. 5, Haymarket, where will be found the series of reproduced drawings from the Louvre and other Continental galleries. For the purposes of art study this application of the photograph is of incalculable value, and we are glad, on this account, to direct particular attention to it.

(From *The Daily Telegraph.*)

On Tuesday evening the rooms of the Architectural Society in Conduit Street were opened to the members of the Photographic Society and their friends for a private view of an excellent collection of photographs, which has been collected for exhibition under the auspices of the Photographic Society. No visitor can fail to be struck, on entering the rooms, with the progress made in artistic photography; and the profession generally appears to have resolved that photography shall in future show greater claims to be considered as a fine art.

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* There is manifestly some error here; 212 is not a picture by Messrs. Robinson and Cherrill.—Ed. Photo. News.

To speak, first, of new processes, we find them somewhat scantily represented; M. Albert, of Munich, alone showing good examples of mechanical printing. In carbon printing there are several exhibitors: Messrs. Marion, of prints of various colours; Mr. Window, of carbon photographs, coarse and heavy in both lights and shadows; and the Autotype Company, of some very excellent reproductions of engravings from Sir Joshua Reynolds' pictures. But the company have failed to do justice to Mr. Good's landscape negatives. Much improvement is evidently required before the carbon process is rendered suitable for the more delicate kind of photographic work.

Among the more noticeable works, "Sea Gulls," by Robinson and Cherrill, holds a prominent place. In this picture a flight of sea gulls is seen, with a background of sky and sea; but tender and harmonious as the tones of both sea and sky may be, they are spoilt by the evident dodge with which the birds are added to the picture, for they are so white and so hard as to have an unnatural appearance. Some good portraits are shown by the same gentlemen, but scarcely so good as some we remember in past years from Mr. Robinson's own hands.

Mr. Hubbard has an exquisite little study, entitled "Stolen Moments," full of true feeling for art. In an album on the table are some charming studies of heads by Reutlinger, of Paris, and the large studies by Mr. Blanchard are forcible and clever. Mr. Mayall exhibits a life-size portrait of Mr. Reverdy Johnson. Mr. Fry has some portraits after the manner of M. Adam-Salomon; but the chalkiness of the faces detracts much from their value. Many studies are exhibited by M. Rejlander, but the photography is inferior, and many of the studies, notably "After the Antique," and "He sees it," are burlesques on art. Two studies from an old wreck, and some landscapes, shown by Mr. Gordon, are charming examples of what can be done in photography; and Captain Lyon's Indian scenes are good, one of the best being the sacred tank and temple near Madura.

Colonel Stuart Wortley's large studies of clouds by day and night are in advance of anything that has been accomplished before, his moonlight pictures being specially noticeable for artistic effect. Some large portraits are also shown by this gentleman, and a Spanish lady's head, in which a white camelia assists in beautifully throwing up the tones of the flesh, is especially good. Mr. Briggs has some good portraits, and Messrs. Fradelle and Leach a number of portraits of more than average excellence. A large picture of Toddington Hall, by Mr. Earl, of Worcester, is a fine example of landscape; and Messrs. Vernon Heath, Sedgfield, England, and Rouch are also well represented in this branch. Very good enamel photographs are exhibited by Mr. Henderson, and Messrs. Lock and Whitfield show exquisite examples of coloured photographs. Mr. Brooks has some very soft and delicate landscapes, but those shown by Mr. Wardley are hard and deficient in atmosphere.

The portraits shown by Mr. Savory are remarkable for artistic pose, as are some by M. Lafosse for power and chiaroscuro. Altogether, the public may thank the Photographic Society for the opportunity of seeing so many good photographs collected together, and photographers may be congratulated on the evident increase of artistic feeling in the display which they have enabled their parent society to make.

(From the *Echo.*)

At the rooms of the Architectural Society, in Conduit Street, a collection of photographs has been made by the Photographic Society, and the exhibition is open free to visitors till Tuesday next, on presentation of their card at the door. A glance through the rooms shows that while the mechanical perfection of photography remains at the point which it had previously reached, a greater amount of artistic feeling, and an evident desire to do greater justice to photography as a fine art, imbues the majority of those whose works are found in this year's exhibition.

Among new processes the most notable is one for mechanical printing, by M. Albert, of Munich. Softness, with a perfect rendering of detail, is characteristic of this process, and it will, in all probability, be a great step in advance of what has hitherto been done in this direction. The Autotype Company show many specimens of printing in carbon, but while the copies from engravings are all that can be desired, the dull opaque shadows, when landscapes are printed by this process, contrast unfavourably with the brilliancy and transparency of shadow in a good silver print.

Of noticeable works in the room we find an album of exquisite studies of heads by M. Reutlinger, of Paris, the delicacy and modelling of which are remarkable. Mr. Valentine Blanchard shows some fine studies from life, the most successful being an old man in a dress of the time of Charles II. The rendering of the texture of the flesh in this picture seems well nigh perfect. Mr. Russell Gordon has a few small landscapes, admirable as regards the photography, and with true artistic qualities. Captain Lyon's Indian pictures are well taken, and this gentleman appears to set at defiance the difficulties of photographing in hot climates. The charming landscapes shown by Mr. Brooks, of Penzance, are conspicuous for aërial perspective and atmosphere; and Messrs. England, Russell Sedgfield, and Rouch all exhibit good landscape work. Mr. Henderson is *facile princeps* in photo-enamels, and we think his work superior to any we have seen anywhere in this special branch. One of the most remarkable pictures in the room is a study by Mr. Hubbard, entitled "Stolen Moments"—a girl standing gracefully posed against the wall of a cottage kitchen reading a letter, while through the open door of an inner room a woman is seen, too much occupied with her baby to give heed to the waste of time occasioned by the "stolen moments." In all qualities of a picture, as distinguished from a mere photograph, this study is perfect, and goes far to remove from photography the reproach of not being a fine art. In Mr. Rejlander's studies the photography is bad, and some of the studies—"He sees it," for instance—positively ugly. Messrs. Robinson and Cherrill have some good landscapes, combined with beautiful effects of cloud, but there is a want of harmony between the lighting of the sky and the lighting of the landscapes, which, in some of the pictures shown, detracts much from their merits. "Sea-Gulls," by these gentlemen, is a bit of sea and sky, with a flock of gulls hovering over the waves. Beautifully soft and harmonious are the lights on water and sky, in this case evidently taken on one negative; but there is a hard, painted look about the gulls which shows that they have been added by mechanical means to the original negative, and not photographed from nature. In Colonel Stuart Wortley's studies photography makes a stride forward, the marvellous effect of his large moonlight pictures having been hitherto unapproached; and three large portrait studies also exhibited by him are remarkable for artistic feeling in no small degree.

(From the *Standard.*)

The opening of the session took place on Tuesday evening, with a fine display of photographs, at 9, Conduit Street. The increase of artistic qualities was the most marked feature of this exhibition over its predecessors. Mr. Wardley, of Manchester, had some remarkably fine pictures, large in size and treatment; and Mr. R. M. Gordon some of those little gems which are quite *sui generis*. Captain Lyon exhibited some photographs of Indian temples of rare excellence and of great architectural interest; and Mr. Stephen Thompson some fine specimens of Italian buildings, but his *chefs d'œuvres* were two pictures of an "Old Kentish Homestead" of the sixteenth century, rich in quaint gables. Vernon Heath, Mayall, W. England, Russell Sedgfield, and Beadell and Wilson, and other familiar and excellent artists, were also well represented.

(From the *South London Press.*)

South London is not unrepresented in the exhibition of the Photographic Society, now open. Let us, however, first state that the fourteenth exhibition of this society was opened with a *conversazione* on Tuesday, at the rooms, Conduit Street, Regent Street, and that this exhibition is by far the finest and most interesting yet attempted. Time was when photography presented little that could lend attraction to a gallery for the public view. Technical excellence was the main thing sought to be illustrated; but now we get pictures, works of art, productions worthy to rank with those of any artist's studio.

In a very interesting series, Mr. Mayall has illustrated the rise and progress of the art. Beginning with the old Daguerreotypes of 1846, he leads on through views of the Crystal Palace of 1851, and continues his specimens till they culminate in a portrait of Tennyson—life-size and coloured—just executed.

What a step from these early attempts on glass to the crown and glory of modern photography—say to the productions of Mr. Valentine Blanchard in portraits, undoubtedly the gems of the exhibition, and Colonel Stuart Wortley's landscapes! It is difficult to imagine—rapid as the development of the art has been—how these works can be surpassed. Messrs. Robinson and Cherrill again have some exquisite things. So has Mr. Rejlander. "Stolen Moments," by Mr. J. Hubbard, is a work of art of a high order. Captain Lyon has some fine Egyptian views. A coloured portrait of an Indian lady on one of the screens is alone worth a pilgrimage to the exhibition. It is simply a gem.

But for the general features we must refer our readers to the Photographic News of this day. Our special purpose was to draw attention to what men on this side the water have done. Mr. E. Cocking, of Peckham, has four photo-crayon portraits worthy of all commendation. This is a very effective form of the art, the result produced being not unlike that obtained by lithography; and Mr. Cocking has been very successful in portraits produced with great rapidity, yet showing high artistic skill. Mr. S. Fry, of Surbiton, member of the South London Society, before which he recently lectured, has some capital portraits after Adam-Salomon's manner, which is rapidly superseding everything else. Mr. F. H. Warlich exhibits coloured photographs of great beauty.

The exhibition, to which we have done too little justice, closes in a few days; but everyone interested in the art should visit it.

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Correspondence.

PHOTO-RELIEFS HANGING AT THE EXHIBITION.

Dear Sir,—I desire fully to indorse all that was said by Messrs. Vandyke and Brown in their letter published in the News of last week. My experience has been very similar to theirs. The very first specimen I executed (which was from an ordinary vignette negative, not taken for the photo-crayon process) brought us an order for six more, and all have given the greatest satisfaction.

I was not a little surprised to find so small a display of this class of portrait in the exhibition, and especially so that Mr. Sarony did not exhibit.

I am not disposed to find fault with that which must have cost a great deal of gratuitous labour on the part of some one, but I cannot help thinking a very great improvement might have been effected in the hanging of the pictures, especially as three or four days were secured for the purpose. I believe that more justice might have been done to exhibitors, and a better and more instructive effect secured, by arranging the portraits in each class by themselves. For instance: had all the photo-crayons been placed together on one of the screens their comparative merits would have been more apparent, and they would not have been "killed" by the vigorous paper prints around them. Again, all the portraits in the "Salomonesque" style (we want a distinctive name for this class of portrait that will be appreciated by the public: will "Rembrandtesque" do?) should have been placed together. I am certain the effect would be more pleasing and more instructive. The chief object of these yearly displays should be to teach each other all we can, and thus raise the standard of photographic portraiture, which will be to advance the interests of all connected with the art. That a great advance has been made during the last twelve months was apparent before one had been in the rooms five minutes; but very much remains to be done yet. Even Mr. Blanchard's masterly efforts might, I fancy, have been improved (I am sure he will forgive my saying so) by more gradation in the backgrounds.

I cannot close this letter without expressing my admiration of Mr. Brooke's beautiful landscapes. What a pity they were not hung on the "line," where their beauties could have been fully seen!

Mr. Hubbard, again, has done well in showing how perfect a picture can be produced by photography in the hands of a true artist. And what glorious skies have been secured by Messrs. Robinson and Cherrill, some of their best landscape studies being "made" by the skies introduced!

I hope we shall have another display next year, when I hope that some attention will be given to the hints I have ventured to throw out. I have no doubt we shall make great progress during the next twelve months in many respects. Especially am I gratified by seeing the mechanical printing processes arriving at such perfection.—I am, sir, yours very truly,

J. M. Burgess.

Photographic Studio, Queen Street, Norwich, Nov. 15th, 1869.

MODIFICATIONS OF THE COFFEE PROCESS.

Dear Sir,—Some time since I promised to send you the result of my experiments with Mr. Newton's modification of the coffee and tannin processes, as described in the Photographic News, May 28th, 1869, p. 256. I have tried the addition of opium and sugar of milk, as recommended, with both coffee and tannin, and do not find any increase of sensitiveness, in either, on the ordinary coffee process as practised by Mr. Bardwell and others. The substitution of sugar of milk for sugar candy, however, seems to give a harder and more brilliant film with the coffee plates.

I used Mawson's collodion, with the addition of two grains of bromide of cadmium to each ounce of collodion, a 35-grain bath, neutral, or nearly so, and alkaline development as recommended by Mr. Mawdsley in the Year-Book of 1868. Perhaps the bath was not strong enough for dry-plate work, but it gave me rapid results with the same collodion used wet. The plates, too, in comparison with Dr. Hill Norris's Dry-plate Company's plates, were no more sensitive, if so much so, as I could get a good negative with a pair of Burr's double stereo lenses on Hill Norris plates in twenty-five seconds with acid pyro development as recommended by the Company, whilst I had to give thirty to forty seconds exposure, same lenses and subject, with both the ordinary and modified coffee and tannin plates, and then did not obtain such good negatives. In all cases (except the Hill Norris plates) I commenced with alkaline pyro, and intensified with acid pyro and silver. I may add that I got a very nice negative with a Hill Norris plate in fifteen seconds (a print of which I will send if you would like it) with the same lenses and stop, developed first with alkaline, and intensified with acid pyro and silver.

I have not succeeded so well with the gum gallic plates as the coffee, which I much prefer, as the film seems much more adhesive, and the colour more nonactinic.

Some time since I procured some of Dr. Liesegang's papyroxyline, and find that I cannot get a good fluid collodion with more than three, or at most four, grains to each ounce of equal parts of ether and alcohol; it seems, however, to give a tenacious film, but I have not yet done any work with it.

Have you seen any negatives by, or tried, the dry process described by Mr. Radbruch in the News of October 15th, p. 500? I remember some few years since trying the addition of resin to collodion for dry plates, and found that they rapidly lost sensitiveness, and were of no use unless prepared in the evening and used next day. If Mr. Radbruch's modified plates will keep, they will be generally appreciated, as they seem to be quite as readily and simply prepared as the collodio-bromide plates, and equally sensitive.

I will not trespass further on your space, which I know is valuable.—I am, dear sir, yours faithfully,

Lutterworth, November 13th, 1869. John B. C. Fox.

[We have not seen any negatives by Radbruch's process, nor have we any knowledge of it beyond that published. We shall have pleasure in seeing the print our correspondent mentions.—Ed.]

REPRODUCING NEGATIVES.

Dear Sir,—Some few months back a customer required me to reproduce, from an old yellow print of "Fenton's Allied Generals," a negative of the same size as the print; and as I obtained my object in precisely the same way as suggested by Mr. Rejlander in last week's News, I send you a copy, an inspection of which will, I think, bear out the truth of your and Mr. Rejlander's remarks on the fitness of the plan for the object in view.—I am, dear sir, yours truly,

November 15th, 1869. John C. Belton.

[The print with which Mr. Belton favours us is an interesting illustration of the method in question.—Ed.]

Proceedings of Societies.

Manchester Photographic Society.

The ordinary monthly meeting of this Society was held at the Memorial Hall, on the evening of Thursday, the 11th inst., the Rev Canon Beechey, M.A., President, in the chair.

The minutes of the previous meeting were read and confirmed, and Messrs. B. W. Bentley and G. Hutchison elected members of the Society.

The President alluded to Mr. Chadwick's notice of motion, and explained Rule 12, which clearly showed that such a motion could not be entertained except at the annual meeting, or at a special meeting convened at the request of ten members. The same remarks applied to the proposition of Mr. Wade, who withdrew his notice.

The following resolutions were then passed :—

1. That the members of the Manchester Photographic Society are sufficient to warrant a division of its business between the Journal and the News.

2. That on receiving the assent of the Editors to this arrangement, each member be allowed to select the journal which he likes best for one year at least.

3. That in case any member may choose to take both journals, he may be supplied with the two at the present rate.

Mr. Noton then exhibited an experiment in corroboration of that part of his paper read on the 9th September last, which relates especially to the sensitized albumen film. A slip of glass was immersed for a few seconds in an old and well used solution of aceto-nitrate of silver. It was then withdrawn, drained a short time, and dipped into a bath of pure water and held there. A precipitate fell from the surface of the glass slip, which was simply a liberation of iodide of silver by a large excess of water. Upon raising the slip, a further fall of iodide took place, and when withdrawn from the bath the slip retained a very fine deposit of iodide of silver. Mr. Noton was of opinion that this experiment showed that if a deposit can be obtained upon the surface of bare glass and retained there, it is reasonable to expect a much denser deposit upon a porous iodized film.

A brief discussion followed, and the subject dropped.

Mr. Wade exhibited a number of excellent photographs taken by Mr. Green, of Liverpool; and Mr. Coote showed specimens of printing on Durand's sensitive paper.

Mr. Noton made a few observations on "diffraction gratings," and showed a slip of glass containing five hundred and one thousand lines to the inch, ruled by Mr. Dancer twenty-five years since.

Mr. Heywood wished to remind the members that the Society possessed a portrait-book, in which he was much gratified to find a portrait of the late Mr. Petschler, and invited all the members to contribute their portraits to the book.

The meeting closed with the usual complimentary votes

Charles Adin, *Hon. Secretary.*

South London Photographic Society.

The usual monthly meeting of this Society was held in the City of London College, the Rev. F. F. Statham, M.A., in the chair.

The minutes of a previous meeting were read and confirmed, and Mr. G. S. Stenning elected a member of the Society.

The Secretary read a letter from Mr. Robinson, offering to send the broken fragments of the gull negative, which had caused so much controversy, for the inspection of members.

Mr. Blanchard then introduced the subject of discussion for the evening: the possibility of restoring faded prints. He had found that a solution of bichloride of mercury removed the yellowness of the whites, and improved the colour generally of faded albuminized prints; but on applying similar treatment to some plain paper prints, they had vanished altogether. On treating the latter, the image reappeared like the magic photographs.

After some further remarks,

The Chairman said he had seen announcements, he thought, of some photographers who made the restoration of faded prints a special branch of business.

Mr. Wharton Simpson said that in many cases where this restoration was advertised, it consisted in producing retouched and improved copies of the original.

Mr. Blanchard said such advertisements also referred to the restoration of Daguerreotypes which became discoloured, but not faded. It was not difficult to restore these if they had not suffered mechanical injury by scrubbing.

Mr. Henderson said he occasionally had discoloured collodion positives brought to restore. The image was often so thin that if the tarnish were removed by cyanide the whole image would probably disappear. He generally applied iodine to convert the image into an iodide, then deposited more silver by means of nitrate solution and iron developer. He could then remove the tarnish with cyanide without risk.

Mr. Simpson said he had devoted some attention to the restoration of faded prints; but the results were not such as had impressed him with the hope of obtaining a method of much practical value. He had tried three distinct modes of working. First, that commonly known, which Mr. Blanchard had described, namely, the use of bichloride of mercury. The best mode of applying this appeared to consist in saturating sheets of bibulous paper with the bichloride solution, and placing the prints between. In some cases the prints were much improved; the whites became purer, and the darks fresher and richer, but generally a little redder. The great difficulty in dealing with the matter consisted in the fact that it was difficult to learn the history of each faded print—how produced, how toned, and how kept—as it involves very protracted experiment for a photographer to produce his own faded prints with especial view to experiment. In the absence of a knowledge of the history of the prints experimented on, precise conditions of practical value could not be laid down. The second method, applied chiefly to developed prints, consisted in carefully washing the print and then redeveloping with gallic acid and a few drops of silver solution. This often restored the vigor of blacks, but invariably discoloured the lights more or less. The third method had the most promise, and was applicable to gold-toned prints. The faded print was immersed in a strong solution of chloride of gold, about two grains to an ounce of water. This generally improved the colour and purity of the print; but if the print were a feeble one to commence with, it generally lost a little half-tone, and if again immersed in hyposulphate to remove any chloride of silver which might have been formed, the print, although brighter, became altogether a much lighter impression.

After some conversation on the advantages of sealing prints up under glass, Mr. Fitch mentioning a case in which a print so treated became covered with mildew underneath the glass,

Mr. Henderson related some experience with prints protected with collodion, &c. The only substance which seemed to preserve the prints was a coating of collodion containing wax.

Mr. Taylor said he had a copy of Talbot's Pencil of Nature. He had shown one of the prints to Mr. Talbot, and asked him if it were changed at all. Mr. Talbot said he thought not, except at the edges, where it was pasted. The prints had been very insufficienly washed, but still remained good.

A conversation ensued on the fine black prints of Mr. Hennah on plain paper, which appeared to be very permanent, notwithstanding their sulphur toning.

After some further conversation, in which Mr. Blanchard, Mr. Howard, Mr. Fitch, Mr. Simpson, and others took part, the value of resinized paper came under discussion.

Mr. H. Cooper said that many prints taken on that paper seven years ago were as good now as ever.

Mr. Simpson said he had a print which he printed nearly seven years ago on resinized paper, prepared by Mr. Cooper. It hung, not sealed up carefully, in a room where gas was constantly burnt, and was not changed at all, he thought.

Mr. Blanchard believed that albumen was conducive to fading, and looked with much interest on the keeping of collodio-chloride prints.

Mr. Simpson, in reply to some remarks, said he would bring for the inspection of members at the next meeting the earliest examples of that mode of printing, produced five years ago, and which were still unchanged. He would also bring some examples which had been undergoing during ten months a very crucial trial.

Mr. W. H. Price thought it important to look for permanency in the use of really permanent materials, such as carbon, as images formed of silver and gold must absolutely, in the nature of things, eventually change.

A conversation on Mr. Henderson's paper followed, several members reporting favourably.

After some conversation, it was resolved to devote the next meeting to a consideration and discussion of the pictures exhibited in Conduit Street, members being invited to bring specimens under their command to the meeting, and also, where possible, examples of the negatives by which the pictures had been produced.

The proceedings then terminated.

Talk in the Studio.

Portraits of Traupmann.—Since it was semi-officially announced that Traupmann's photograph did not exist—except one copy with the authorities—the town is flooded with the "krict card" of the arch-scoundrel. Any young man aged twenty will do. The handsome little bar-girl that he left behind him was married on Wednesday. She was persecuted with admirers.

Photography and Ethnology.—Our excellent contemporary, *Nature*, mentions that "the editors of the new 'Journal of Ethnology,' published in Berlin, circulate with their first number a hand-bill, in which, after calling attention to the extreme importance of photography for ethnographical purposes, they request photographers of all nations to send to the publishers of the Journal their addresses, and a statement of the ethnographical types to be found in their neighbourhoods. It may fairly be questioned whether scientific knowledge is likely to be much advanced by the indiscriminate collection of photographs of individuals, selected by persons totally unacquainted with ethnography. The editors seem, moreover, to be somewhat premature in issuing such a notice as this, as they appear to have taken no steps to arrange for the photographs being published; neither do they undertake to deposit them in any public library or museum. They merely say that men of business will no doubt be found, who will assist in a matter which assures them, as well as the photographers, the remuneration to which they are entitled. We venture to express a hope, that if any general response is made to this notice, the photographers will be at least cautioned to use great care in ascertaining the tribe and parentage of the subjects they select; also, that in all cases, one photograph may be taken in exact profile, and another in exact full face."

Photographing Birds in Flight.—A correspondent suggests a means of securing negatives of flights of birds. He says:—"It appears to me that 'Stuffed Gull' and Co. are very scurrilous in their remarks respecting Mr. Robinson's picture, and very ready with their doubts as to the truth of his statement. In my opinion it would not be very difficult, on some suitable day, to focus some pigeons on the gable of an outbuilding or on the lawn, and when all is ready they might be very easily frightened off, when the instantaneous shutter might be sprung, and I do not doubt, on developing, a more lifelike picture would be obtained than by the ingenuous stuffed gull process.—J. W. L."

Preparation of Silver Nitrate.—P. Scivoletto proposes the following modification of the process of preparing silver nitrate for use in medicine, photography, &c.:—This salt is usually prepared from old silver containing copper, by dissolving the alloy in nitric acid, evaporating to dryness, and calcining the residue as long as nitrous fumes continue to escape. The product is a mixture of silver nitrate and cupric oxide, from which the former may be dissolved out by water. The inconveniences of this process are the time it takes, and the difficulty of ascertaining when the cupric nitrate is completely decomposed. To obviate these inconveniences, the author, after evaporating the solution of the mixed nitrates to dryness, redissolves them in water, and precipitates the silver from the neutral solution by means of a clean spiral of copper foil. The precipitated silver is then redissolved in nitric acid, and the resulting nitrate is either crystallized, fused, or left in solution, according to the use to which it is to be applied.—*Nature, and Ann. di Chim.*

New Test for Alcohol.—Lieben has discovered a new and very delicate test for the presence of alcohol, depending upon its conversion into iodoform. The liquid under examination is heated in a test-tube, into which are then introduced a few grains of iodine and a few drops of potash solution; whereupon, if alcohol is present, a yellow crystalline precipitate of iodoform is produced immediately, or after some time, according to the degree of dilution of the liquid. This test is said to be capable of detecting one part of alcohol in 12,000 parts of water. For greater certainty, it is best to examine the precipitate with the microscope, iodoform exhibiting the appearance of hexagonal plates or six-rayed stars. The test just described is capable of an important physiological application. It is generally supposed that alcohol introduced into the animal organism in the form of wine or other spirituous liquors becomes completely oxidized, and does not pass into the urine as alcohol, but in the form of some product of transformation. Lieben, however, by applying the new test to the urine of a man who had drunk a bottle of wine half an hour before, was able to detect the presence of alcohol in it. A second portion of urine voided by the same individual an hour later, and a third, after another half-hour, still exhibited the peculiar reaction under consideration. The urine was, of course, distilled before applying the test, and it had been previously ascertained that none of the other volatile matters contained in it would produce a similar reaction.—*Nature, and Ann. di Chim.*

Method for Rapidly Separating the Nitrates of Silver and Copper from each other.—Dr. Palment, in the *Pharmaceutische Zeitschrift*, describes a method of preparing nitrate of silver from small silver coins which containde a large percentage of copper. The alloy is dissolved in nitric acid; the solution is filtered, if necessary, and evaporated until it has the consistency of a thickish oil; when this point is reached, there is added to the solution very concentrated nitric acid free from HCl. By this proceeding all the nitrate of silver is precipitated, while nitrate of copper remains in solution. One part of the concentrated metallic solution requires from three to four parts of nitric acid for the complete precipitation of the nitrate of silver; the more concentrated the nitric acid is so much the better, but acid of 1·250 sp. gr. answers the purpose. The solution of copper is decanted off, and the nitrate of silver washed with nitric acid.—*Chemical News.*

Different Sizes of Drops.—Herr Quincke, of Berlin, has found (*Poggendorff's Annalen*, for Nov.) that the size of the drops, formed by liquids of the most different kinds bear a fixed relation to their chemical composition. He deduces from his experiments the law that all liquid substances, at a temperature near their liquifying point, have specific cohesions, which are proportionate to the numbers 1, 2, 3, 4, &c. If the specific cohesion of the metallic bromides and iodides be taken as 1, that of mercury and the nitrates, the metallic chlorides, the sugars, and the fats, is represented by 2; that of water, the carbonates, sulphates, and probably also the phosphates, by 4. Of the metals, compared to the same unit, the specific cohesion of lead, bismuth, and antimony, is 2; that of platinum, gold, silver, cadmium, tin, copper, is 4; that of zinc, iron, palladium, 6; that of sodium, 12.—*Academy.*

Waterproofs.—The "Lounger" of the *Illustrated Times* gives a hint which may be of service in connection with covers for photographic tents. He says:—"By the way, touching waterproofs, I think I can give travellers a valuable hint or two. For many years I have worn india-rubber waterproofs, but I will buy no more, for I have learned that good Scottish tweed can be made completely impervious to rain; and, moreover, I have learned how to make it so, and, for the benefit of my readers, I will here give the recipe:—In a bucket of soft water put half a pound of sugar of lead and half a pound of powdered alum; stir this at intervals until it becomes clear, then pour it off into another bucket, and put the garment therein, and let it be in for twenty-four hours, and then hang it up to dry without wringing it. Two of my party, a lady and gentleman, have worn garments thus treated in the wildest storm of wind and rain without getting wet. The rain hangs upon the cloth in globules. In short, they are really waterproof. The gentleman, a fortnight ago, walked nine miles in a storm of rain and wind such as you rarely see in the south, and when he slipped off his overcoat his under-clothes were as dry as when he put them on. This is, I think, a secret worth knowing, for cloth, if it can be made to keep out wet, is in every way better than what we know as waterproofs."

To Correspondents.

ONE WHO TRIES HARD.—For collodio-chloride of silver, and for collodion for enamelling purposes, methylated spirits and methylated ether will answer perfectly. It is not satisfactorily proved that methylated solvents are ever injurious in collodion. 2. Paper coated with gelatine, dried, and coated with collodion containing a chloride, then excited on a silver bath, would yield good prints. Chloride of ammonium, being very sparingly soluble in collodion, would not answer well. Chloride of calcium, or other chloride soluble in alcohol, should be used. A paper so treated would probably answer for transferring images to some other basis. Pure gelatine will not dissolve in cold water, but it will readily do so in warm water. 3. The C series of lenses are decidedly most rapid. The 1B short and 1B long are very slightly different in rapidity. The C is twice as rapid. 4. Your difficulty with the eburneum process is probably due to the use of an unsuitable sample of collodion. A porous collodion does not answer; it will frequently stick to the glass. A horny sample is required.

J. A. MILES.—We do not know of any agents for the collodio-chloride paper of Sander and Risse in this country at present.

K. HEARN.—In the old camera-obscura the image is received on a mirror placed at the proper angle to throw it down again on to the table or plane of delineation. Any photographic lens will answer the purpose; but for the camera-obscura, as commonly used, much commoner lenses are employed. The image received on the ground glass of the photographer's camera is of precisely the same character; but the vertical position is more convenient for use, besides getting rid of the loss of light by reflection.

G. P. W.—There is no work devoted solely to double printing. The best information on the subject is contained in Mr. Robinson's work just issued, price 7s. 6d. 2. The best plan would be to whitewash the roof in question. If you cannot do that, stipple such part of your window, to imitate ground glass, as may be necessary to get rid of the trouble.

LOMBARDI.—Thanks. The matter will receive attention in due course.

M. S.—We will ascertain, and let you know. Mr. Croughton will answer questions as to difficulties in our pages. You are right as to the very great excellence of Mr. Blanchard's pictures in the exhibition.

G. E.—There are various modes of preparing plates for long exposures, but none better than the plan of washing the plate in distilled water, as described by Mr. Hughes. When plates so prepared produce fog, it arises from the use of impure distilled water, or the use of collodion insufficiently ripe for the purpose. A plate coated with collodion containing a full share of bromide, and immersed in the bath for about half the usual time, will bear a long exposure without risk. If you do not succeed in this way, try some of the preservative processes—the honey process, or the glycerine process, for instance.

AN AMATEUR.—Major Russell does not exhibit at all. The exquisite pictures to which you refer are by Mr. Russell Manners Gordon, who produces finer landscapes, perhaps, than any photographic amateur in the world. A good lens is imperative in the production of good work. A bad photographer may produce bad work with good lenses; but it is quite impossible to produce good work with a bad lens. Mr. Gordon uses various lenses; but, we believe, his favourite is Dallmeyer's rapid rectilinear. Mr. Blanchard's large portraits were produced by the D lens of the same maker. Mr. Robinson's views, so far as we know, were taken with a single view lens. We are glad you were so much pleased with the exhibition, and hope you will profit by it as you desire.

C. P. R.—The probable cause of the minute spots on your print is the formation of minute bubbles on the surface during the process of fixing, and thus causing imperfect fixation at each point, and so issuing in small yellow spots.

CROYDON.—We cannot advise the form of studio you contemplate. The sloping front skylight is not easy to manage. As the result of much observation and familiarity with most of the best studios and their modes of working, we feel satisfied that the studio at once most simple and efficient is the ordinary oblong room with ridge-roof. With your dimensions—twenty-seven feet by thirteen feet, which are excellent—we should build the room east and west, so as to secure a good north principal side-light. This side and roof should be glass, with the exception of about five feet at each end; the south side and roof opaque, or, possibly, a little light usually covered with a blind, to be opened on special occasions for special purposes; ends both opaque; height eight or nine feet to eaves, thirteen or fourteen feet to ridge. With such a room, little use of blinds will be necessary, and, when necessary, they will be simple and easy to manage. Mr. Fry built such a room as you contemplate, and afterwards felt it necessary to alter the studio portion proper into a ridge-roof.

W. CROUCH.—We do not recommend the permanent stopping out of any portion of your light by blinds, but should recommend to have blinds, so that you can stop out any portion of your top-light at will. Sometimes you will require more, and sometimes less; and if you have blinds running from the bottom of the roof to the top, the width being divided into two or three blinds, as may be convenient, you can then secure considerable control over the lighting. The sloping front and top-light is always difficult to manage, and almost impossible to work with successfully unless the room be sufficiently wide to place the sitter under a blind, and allow the light to reach him from another portion of the roof, so as to have the effect of a high side-light. We do not see that much advantage can be gained by extending the glass more in front. The two pictures you enclose have the defects of a front and top-light. No. 1 is soft, but somewhat flat; No. 2 is flat and hard, having been under-exposed. The pedestal is not in good taste. The curtain is too dark, but might be arranged to answer if you could get more light on it, in which case a darker background would be better. No samples for curtains were enclosed in your letter.

H. ROBINSON (Manchester).—Much depends on the kind of work, as to which is the best method of enlargement. There are three or four methods of enlargement in common use, each of which has advantages. For life-size, where one or two impressions only are wanted, the solar camera answers well. Where less enlargement is required, and many copies are wanted, the production of an enlarged negative is a good plan. The simplest method is enlarging in the camera on collodion, and transferring as we have described on several occasions. The best results are, we think, obtained in this way.

W. T.—The patent portrait lens is quicker than either the D or the rapid rectilinear.

M. H.—We regret to say that Mr. Gordon does not publish. His labours are purely of an amateur character, and, except at exhibitions, the public have no opportunity of becoming acquainted with his exquisite work.

A. S.—In Mr. Johnson's carbon process, glass may be used either as a temporary or a permanent support for the carbon image. His patent does not especially contemplate pyro-photography; but we have some very respectable enamels produced by the carbon process. Vitreous colours are mixed with the smallest available amount of gelatine. The amount of organic matter remaining after the development of the picture is so small that it does not cause cracking, but is completely deflagrated in the burning-in process.

C. ADIN.—Thanks. The alteration is duly made.

B. GOODE (South Australia).—Thanks. Your prints are of good average quality, and very interesting.

A MEMBER OF THE SOUTH LONDON COMMITTEE.—We gave insertion to your first communication because it was a simple statement of facts, of the truth of which we were aware, and which, in the interest of the South London Society, it seemed desirable to place once for all on record. No amount of repetition can make it more true, as no amount of denial makes it less true or alters the facts. But the subject is not of sufficient interest for further iteration or discussion, and you may rest assured that further detail of the facts is not necessary to satisfy those concerned. The untruth of the story of the set-off and other explanations can be easily ascertained by any one concerned. The confusion between a member of the Society and a member of the Committee does not exist in our pages; it is one of the usual blunders of the writer in question. We have never mentioned a member of the "Society."

W. L. NOVERRE.—Thanks for the useful hints. Waxing is, in careful hands, an excellent remedy for dirty plates; but, in some instances, with a tough collodion and acid bath, the film leaves the plate. The advantages of very dilute albumen for the same purpose are, that it is efficient under the circumstances in which the wax is doubtful, and that it aids in the production of a richer image. 2. The backing paper for photo-crayons is slightly rough, which gives a pleasant softness to the image on the glass by the interruption, in fine points, of the perfect contact between the image and the backing. 3. Marion and Co., of Soho Square, did keep the collodion pellicle, but we are not sure that they continue to do so.

A WOULD-BE MEMBER.—You can easily satisfy yourself as to the exact facts by enquiring of the Secretary of the South London Society, Mr. E. Cocking, Photographer, Queen's Road, Peckham. You are in error as to the identity of the excluded reporter, and it is not desirable to publish his name here. Mr. J. T. Taylor represents the *British Journal* at the meetings in question, and is not only an active member of the Society, but a member of the Committee. He has never been in antagonism to the Society, but always an efficient ally.

M. R. S.—If you cannot send for your pictures, you had better communicate with Mr. Spiller, the Secretary, who will probably make some arrangement.

⁂ Several Articles in print are compelled, by press of matter, to stand over.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CRITICS, CRITICISMS, AND PHOTOGRAPHERS.

"Where they do agree *in the press*, their unanimity is wonderful." We crave pardon of Sheridan for quoting him with a difference, but we have been forcibly struck with the appositeness of the words whilst examining the opinions of the press generally on the photographs exhibited in Conduit Street. The display of sun pictures has been unusually honoured this year by outside notice and criticism. *Jupiter Tonans* and *Jupiter Junior* have spoken, and the ideas of the latter have been echoed in an evening paper. Other portions of the press, daily and weekly, have also placed on record some notice of this year's exhibition. The general wonder, after reading the whole of the opinions, will be rather at their divergence than their unanimity. Nevertheless, there was one point on which they were unanimous: they appeared generally to be imbued with a wholesome fear of "tricks" by which they might be seduced into admiring as a wonderful natural effect anything which was the result of a manipulatory dodge on the part of the photographer. Nothing misleads a critic so much as over-caution on the one hand, and over-knowingness on the other; and the two are closely allied. As the coward sees an assailant in every bush, the over-cautious or the over-knowing critic sees a trick in every effect he cannot understand. It is the critic's business to be well informed on the subject upon which he writes, or to appear so; and to confess ignorance of details, or to express wonder at an effect which may have been very simply produced, would destroy his prestige. It would be fatal to him to confess that he was deceived by the bray of the ass because it wore the lion's skin; and if he really be not familiar with the lion's voice, he is apt to commit himself in another direction by assuming that the lion itself is only an ass. If he be wise enough only to intimate mysteriously that he "sees through the trick," he may pass off without detection, if not with flying colours; but if he descend to detail, and, speaking of a series of pictures, refer to one as "described in a poetical quotation as a sunset view," although lighted by a "sun not very far from the zenith," when in truth there is not one picture described as a sunset view in the series, the honesty, the discrimination, and the capacity of such a critic are naturally questioned. Fortunately for the accredited art-critics, it is not in the non-photographic press that such a blunder as that is perpetrated. The criticisms in these are, for the most part, kindly and honest, and, in some cases, able; but the words "trickery" and "dodging" had got buzzed about, and the fear of deception in many cases seemed to have paralysed the perception and warped the judgment.

In another case the critic's views are dominated by a foregone conclusion. The writer in the *Times* says that he has before expressed his conviction that the true function of photography is to "record facts as they are, and not as arranged for pictorial effect." He adds: "If, indeed, the theory of some of our painters were true—that the painter's work is simply to represent what he sees before him—then the photographer might claim to be put in the same rank as the painter, and above him. * * * But if, as we hold, the distinctive function of the painter's art be not transcription, but new creation, the condition of which is the subordination of the objects represented to certain mental states and acts of the artist, it is evident that photography is excluded, for the sun *will* paint what he sees as exactly as he can." To us it seems that there are two or three radical errors embodied in the sentences we have quoted. We need not dwell on the error of narrowness in supposing all art to be of a creative character, which excludes at once from the art category all imitative art. This scarcely needs discussion. There is a further error in regarding photographs as the work of the sun in the sense indicated. They are the work of the photographer, and, within limits, as distinctly bear the impress of the producer's mind, and indicate his capacity and intention as truly, as do the results of other plastic arts; indeed, all praise or blame of the photographer for the art qualities of his work would be meaningless if they were beyond his control, and simply the work of the sun.

But the cardinal error is the assumption that it is not the function of the painter to paint what he sees, at least in all renderings of nature, whether in portraiture or landscape. This is, of course, an old subject of controversy, embracing much wider considerations than belong merely to photography. It involves the question as to whether art should represent truth, or merely the painter's conception of truth, which, in any departure or modification, must, we submit, fall short of, rather than transcend, truth. We utterly protest against the notion, in portraiture at any rate, that there should be any "subordination of the objects represented" to the mental state of the artist. The notion of idealizing portraits is an old one. That the artist should invest his sitters with a grace or a nobleness not their own was at one time regarded as a matter of course. Dr. Johnson said, that it was one of the highest proofs of the genius of Sir Joshua Reynolds, that he contrived to give nobleness to the head of Goldsmith in his portrait, whose genial soul and fine intellect were not habited in a very dignified or handsome body. If Reynolds gave to Goldsmith a nobility of countenance which nature had denied, but which the painter conceived was more characteristic of the inner man than the actual presentment, then we have in the portrait Reynolds' conception of what Goldsmith ought to have looked like, and not the actual portrait of the man. If he merely depicted him at his best, happily catching the expression which lit up the face when it was a-glow with some unusually happy thought, then he did not give Goldsmith the noble look, but, with the true painter's skill, readily detected the noblest effect, and gave permanent form to a transient expression. This it is the prerogative of the painter, in many sittings, during many hours, to effect. It would be equally the prerogative of the skilful photographer, with a tithe of the time and opportunity, if either were afforded him; for if the highest duty of the painter is to seize and to perpetuate the best actual expression presented to him, photography can do that more rapidly and efficiently than the most skilled hand can be expected to effect it. Photographs, it may be admitted, then, are rarely such noble portraits as the skilled painter can produce, simply because the photographer rarely has such opportunities, in the few brief moments often given up to sitting for a photographic portrait, of seeing and securing the best phases of his sitter's countenance, as are afforded to the painter.

In imitative art, at least, it is the business of the artist to perceive beauty, to select, and it may be to combine, and then to render as faithfully and truly as he can see it. A recent writer, referring to portraiture, states this fact very aptly. He says:—

> There is only one way to paint a man at his best; namely, to paint his features with the same unswerving accuracy as if you wished to paint him at his worst; and secondly, that to attempt to represent inner life and character by altering and improving those features through which alone character is made visible, is about as absurd as it would be in a violinist to put the strings of his fiddle out of tune in order to play on it with more touching and true expression. When a generation of artists has arisen who will hold and act upon the principle that all attempt at beautifying or prettifying the human face in portraiture is as irrational, unartistic, and destructive of true beauty as was the whitewashing of columns and delicate traceries and elaborate oaken carvings by which the churchwardens of the past delighted to give a "neat and chaste" look to venerable churches and cathedrals, we may then hope to see English portrait-painting rise to its natural level, and be recognized as an art worthy of the devotion of the very ablest of painters.

If these views be true, the *Times* doctrine of the limitations of art is obviously too narrow, if not dangerously unsound. It is satisfactory to find, however, that it is not absolutely carried out, for the writer endorses the theory and practice of Mr. Robinson as to the importance of the photographer's "cultivating his artistic faculty in the choice of points of view, conditions of light and shade, and arrangement and pose of sitters." He agrees, also, with the view which we have also maintained, in relation to combination photography, that "everything depends on the judgment with which the combinations are made; when this is sound, as in their examples [the landscapes of Messrs. Robinson and Cherrill], the effect is excellent."

Let us now glance at the contrarieties of judgment expressed in what we may term the outside press. One of the first of several which strike us is found in the opinions expressed of Mr. Blanchard's portraits. In the *Times* the able critic, having the wholesome fear of portraits treated with an evident eye to pictorial effect, speaks of Mr. Blanchard's portraits as having "fallen into errors of excess in chiaroscuro or expression." The *South London Press*, a most ably conducted local journal, but of necessarily less influence, speaks of the same pictures as "undoubtedly the crown and glory of modern photography," and as "undoubtedly the gems of the exhibition." The writer of the latter opinions we know to be a gentleman of fine taste and high culture, probably less wedded to the ideas of a certain school of art, but not in any degree less trustworthy in judgment than the writer of the disparaging criticism. Again, the *Times*, speaking of the wonderful effects of light and atmosphere by Col. Stuart Wortley, calls them a "tricky series," and adds, "they are clever, and there an end. They can only mislead the painter." The *Daily Telegraph*, speaking of the same pictures, describes them as "in advance of anything that has been accomplished before." We might multiply examples, but these will suffice. They are sufficient to illustrate the opposite opinions which abound, and to show especially that in the able and interesting article of the *Times* the critic was under the domination of certain rooted ideas, and a morbid fear of anything which was not simple, unsophisticated photography. The pictures of Col. Stuart Wortley are really produced each from one untouched negative, and are literal transcripts of the scenes before the camera. Whether sunlight pictures can quite accurately represent moonlight effects we do not here discuss, but the effects are rare and beautiful, and the fact that they are unfamiliar in photography is no good reason, we submit, for regarding them as "tricky." We go further: we submit that because a critic does not understand how a thing is produced, he has no right to assume that it is the result of a "trick." The same facts obtain in relation to the pictures by Mr. Blanchard. More than one art critic objected to the amount of working on the eyes of certain of the pictures, some fancying that it consisted of body colour in the prints, and others that it was the result of working on the negative, and both classes agreeing that the light was applied where it could not possibly have been in the model. Nevertheless, we have examined every negative, and can aver that there is no light in any print that is not in the negative as produced in the camera, and all the working on any of the negatives consists in half-a-dozen touches with a lead-pencil. We were, indeed, by the comments of some shrewd critics, reminded of the well-known story of the critic who complained of the bad drawing of a fly, which he conceived to be painted in a picture, whereupon the insulted insect, resenting his criticism, flew away!

From all honest criticism, however, the photographer may gain instruction. As a rule, where the observer honestly finds a fault, there is something wrong in a picture. It may be that the picture is true, but it should also seem true. Art demands not only the *vrai*, but the *vraisemblable*: an effect should not require explaining. And where even an effect in photography has been produced by legitimate means, if it convey an impression of the false and unnatural, it is certainly not true in art, whatever it may be in fact.

Another important hint may be gained from recent criticism; namely, the importance of avoiding dodges of a doubtful character. Photography has a character for maintaining in its pictures the "eternal veracities," and to make it speak untruth is not lying only unto men, but unto the highest spirit of truth in art representation. Photographers should be jealous of anything which can undermine the corner stone of their art edifice—its truth.

THE ALBERTTYPE PROCESS.

M. J. **Albert** has issued a circular in reference to the manner in which he proposes to popularize his process in Germany. He states that, inasmuch as gentlemen desirous of receiving instruction in his process are at present compelled to journey to Munich, and there to sojourn some time during their initiation, he has made arrangements to establish two branch establishments for imparting instruction in the art. One of these establishments is at Vienna, under the superintendence of M. L. Angerer, and the other at Berlin, directed by MM. Haase and Co.

The terms for instruction at these establishments will be two hundred thalers, or thirty pounds stirling, for which sum gentlemen will receive information on all points connected with the process, and have an opportunity of personally performing the different manipulations. It is presumed, in the absence of any statement to the contrary, that this payment will also carry with it a right to work the process to any extent where no patent exists. Pupils will also, if they deem it desirable, be permitted to visit the original establishment at Munich, under M. Albert's direction. Specimens of the process will also be submitted for examination to any one desirous of inspecting the Alberttype pictures previously to making arrangements for instruction.

M. Albert concludes his circular by stating that MM. Ohm and Grossman, of Berlin, are working an invention of his without his sanction (under the title of *Lichtdruck*), an invention which has already been patented by him in Bavaria, Austria, France, and Sweden; and he further states that specimens of Alberttype are being circulated by that firm as illustrations of the capabilities of the process they are employing. In proof of the process belonging to M. Albert, he declares having made a statement on oath to that effect to the Patent Commissioners of the United States; and he has moreover received two gold medals and been elected honorary member of the Vienna Photographic Society in acknowledgment of the fact.

PHOTOGRAPHY AND THE LATE ECLIPSE.

We find in the last number of the *Journal of the Franklin Institute* several items in relation to the photographing of the late eclipse which will interest many of our readers, for whose benefit we reprint some extracts.

"*The Corona and its Photographs.*—It is a very fortunate thing that the numerous parties by whom photographs were made of the late eclipse, in hardly any two instances followed the same plan of arrangement or aimed at the same class of results. Thus, while the Philadelphia Expedition, in pursuance of Prof. Coffin's suggestions, made their preparations with the view of obtaining such 'accurate and well-defined pictures as might be the basis of astronomical calculations.' In this they have unquestionably succeeded beyond all others, as we hear from all sides, now that pictures have been distributed and compared. Their views of lunar mountains, sun-spots, faculæ, chromosphere, and crepuscule being unapproached, and their views of the solar prominences only rivalled by one obtained by Dr. Curtis.

"The party under Prof. Pierce, consisting, photographically, of Mr. Whipple, of Boston (who, with Mr. Black and the late Prof. Bond, of Cambridge, made, in 1850, the first celestial photograph), addressed themselves exclusively to the recording of that strange phenomenon, the corona. To secure any impression from this object, which, notwithstanding its apparent brightness, is remarkably deficient in photographic power, it was necessary to make a very small image, and to give a very long exposure.

"The telescope was therefore arranged to produce an image in its principal focus simply, and during the totality an exposure of forty seconds was given. By this means a picture was obtained. From the long exposure and motion of the moon, as also, probably, of the light in the corona, there is little sharpness of definition, and the prominences only appear as bright spots. The general shape of the corona is, however, very well given, and the curious appearance of curvature, in some parts, is very manifest. This and other pictures—if others than the one we have seen were made—may throw some light upon this extraordinary object."

Professor Mayer gives an exceedingly interesting account of his operations as chief of the Burlington section of observers. The following remarks on the line of light at the edge of the moon in the photographs are worthy of attention:—

"All the photographs show a beautiful gradation of shade from the border of the sun inwards. This *shading of the source of light* is due to the absorption of the peripheral rays, which necessarily pass through a greater thickness of the dense solar atmosphere than those which emanate from the central portion of the disc.

"On a more searching examination of the relative intensities of light of different portions of the solar disc, we observe on all of these photographs, close to the limb of the advancing or retreating moon, a bright glow like that of early dawn, which extends from the moon to a distance of about 15″.

"Thinking that this might be subjective and due to the strong contrast existing between the bright image of the sun and the contiguous black lunar disc I made the following experiments.

"I covered the image of the moon with a disc of white paper of its exact diameter. The plate was now inclined to the light so that the sun and the paper surface had as nearly as possible the same white tint, while the photograph was viewed against an illuminated ground formed by a sheet of white paper placed before the window. Under these circumstances the glow remained the same in all the photographs examined. Among others, plate No. 11 (which is the best photograph of partial phase in the series), shows this glow unequivocally.

"Plates Nos. 21 and 30 are excellent photographs of thin crescents of the sun; the first taken 5 m. 12 s. before, and the second 3 m. 33·5 s. after, totality. This glow, if it really exist, should show in these pictures an increased illumination in the points of the cusps when the light of these portions of the periphery of the sun is compared with an equal breadth of the sun's border, taken on that portion of its limb the farthest from the moon's. To make this comparison, I covered with white paper both the moon and the dark ground surrounding the sun, and inclined the plates as in the above experiment, so as to destroy irradiation from juxtaposition of the light and dark surfaces. This method of examination showed a distinct illumination in the narrowest portions of the horns of the crescents.

"No such glow is seen on the periphery of the sun, although this is contiguous to the dark ground of the plate, and on covering the latter the appearance remains the same.

"I am therefore convinced that this glow really exists, and if it cannot be accounted for in node and in *measure* by defraction, it must be due to a lunar atmosphere; though, I confess, I cannot understand how an atmosphere capable of producing such marked effects when projected against the intensely lighted disc of the sun, should have no appreciable refractive effect on small stars, and especially on double stars, when occulted by the moon.

"This glow can be distinctly traced on plate No. 11 to 18″ beyond the limb of the moon."

Professor Pickering gives the results of his thermometrical observations, which, very curiously, he finds to coincide with the increased brightness along the edge of the moon, which, being so closely analogous to chemical halation, we in our first notice of the photographs without hesitation attributed to that cause. We hope shortly to publish the results of some experiments by Professor H. Morton, now in process, in connection with this subject. Professor Pickering says:—

"Shortly before the eclipse the thermometer *rose*, attaining its maximum at the instant of contact, so that when three digits or fourteen per cent. of the sun's disc was obscured, the temperature was about the same as before the eclipse. Again the thermometer continued to rise after the eclipse was over. These results were at first considered anomalous, but they were unexpectedly confirmed by the photographs of the sun taken at the same time. The increased brightness which these show along the moon's limb prove that the latter augments the actinic power of those parts of the sun's disc nearest it, and this renders the increase of heat also very probable."

Professor Mayer concludes his report with some interesting remarks on the use of photography in observing the transits of Venus:—

"We here venture a few remarks, showing the peculiar value of photography in the observations of the transits of Venus.

"It has been shown that the sun's image was photographed on the camera plate with an exposure of only 1·500th of a second; and the duration of exposure for any other instrument can be determined with as great precision by the method which I employed.

"The instant the mechanical movement exposes the plate, it also records the time of that exposrre on a chronograph connected with a break-circuit clock, and thus we have an accurately delineated *figure* of the transit corresponding to a *time* marked on the face of the clock employed; and this correspondence of figure and time is unaffected with personal equation either of sight or of hearing. Now if the error and rate of the clock can be entirely freed from the personal equation of the observer who determined them, and if the longitude of the station be found by the coincidences of the beats of a sidereal clock with those of a break-circuit mean solar clock placed at the observatory of the first meridian, we have the most accurate means of obtaining the *absolute* times of contacts at the station of observation.

"Thus we see how applicable will be photography to these observations; for the data of the solar parallax will be given either by observing *the absolute time* of the ingress or of the egress (which method is alone of value in the transit of 1874), or by determining *the duration* of the transit of Venus over the solar disc. The photographs are *permanent* phenomena on which we can repeat our measures at leisure, with every appliance of precision, while it is impossible to attain a similar degree with eye and ear, from the difficulty of micrometically measuring at a *precise* instant the distance of Venus from the sun's limb, and from the (recorded) distortions of Venus at contacts.

"It will also be of great value to have a photographic record of the appearance of Venus at the contacts, for *if* the disc of the planet then should appear on the plate to depart from a circle and have attachments to the sun's limb, these distortions can be measured and allowed for.

"An idea may be formed of the apparent size of Venus during its transit of the sun's disc from the fact that the umbra of the solar spot in the south-west quadrant is 15″ in diameter, and that Venus at transit will subtend an angle of about 70″; so that the planet would appear on the plate as a disc 4⅔ times the diameter of this spot, or as a disc of ·107 inch diameter on an image of the sun of 3 inches n diameter.

"The negatives of these photographs I find from trial will stand a magnifying power of 50 under the micrometer, and as 1″ of arc will equal 1-700th inch on a solar image of 3 inches diameter, we can, with the above-mentioned power, divide a second into ten parts. This supposes, however, that the bisection by the micrometer thread is on a perfectly well-defined point, and this does not exist in the outlines of any photograph, and especially is the limb of the sun indistinct on account of its shading, and of the manner in which the silver is deposited in the collodion film.

"From actual experience in measurements under the micrometer, I find that we cannot, as yet, hope to make a bisection on the sun's limb closer than ½ of a second. On the boundary of the umbra of a well defined-solar spot we can read to ¼ of a second, and from this I should think that 2-10ths of a second might probably be attained as the limit in a reading on the limb of the image of Venus.

"But with measures as close as these, and the tables of Venus brought to the accuracy which existing unreduced observations can give, we may reasonably hope for a determination of the solar parallax comporting with the most exact astronomical measures of this century."

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MOUNTING PRINTS WITH GLUE.

BY W. L. NOVERRE.

Of the numerous substances that have been recommended for mounting photographs, glue is probably the best, as it certainly is the most strongly adhesive. The best pale glue should be used, and it should be quite free from any trace of decomposition. After moistening a sufficient quantity in cold water till it swells up, dissolve slowly by heat, on no account allowing it to boil. When perfectly dissolved, strain through a piece of wet flannel into a clean vessel surrounded with hot water, that the glue may keep fluid during application. For applying glue to the prints, stiff grainer's brushes are the most convenient; they are used by painters for graining imitation woods; they are flat and broad, and of various sizes; they may be made stiffer by cutting the hairs short with a pair of scissors. The glue should be applied to the untrimmed print, which should be laid on a board or a glass plate. Lay the glue on evenly and quickly, and set aside or hang up by a corner to dry. If the print cockles inconveniently, as albuminized prints are apt to do in hot, dry weather, slightly damp the albumen side, which will cure the evil. The strength of the glue solution can best be ascertained by a few trials; it should be so thick as to leave a decided glaze on the paper, and this with one application of the brush. The brush should not be too full, and should be pressed firmly on to the print. Care must be taken that no spot has escaped the application. After the prints are dry, they should be trimmed in the usual way with a sloping plate and knife, the prints being placed on a slab of plate glass.

To mount the prints on plate paper or cardboard, the mounts must be slightly damped. They must not be damped too much, or the print will not adhere firmly. If india-tinted plate paper is used, the mount should be damped from the back, because the tinted part blisters if the moisture is first applied on that side. With a stout india-tinted mount the damping should not show through to the front. The mounts may be conveniently damped with a clean soft sponge; a little practice will show just what amount of moisture is necessary. The mounts may be piled one on another after damping. When the mounts are properly damped, turn the pile upside down, and begin with the top one. Place it on a flat board or glass slab, and very slightly damp the glued side of the print. This is done by pressing it flat on a piece of damp paper, which has been laid flat on a glass plate. The moisture must be just sufficient to make the glue slightly tacky, but nothing more. It is then fixed in its place on the mount, and pressed down evenly with a cloth or the finger, a sheet of smooth paper being placed over the print. When the contact is perfect the print is ready for rolling; but it is more convenient to mount all the prints at once, and then do the rolling; this may be done, the mounted prints being piled one on the other till all are completed. The rolling should be done before the mounts dry. The plate and bed of the rolling press should be perfectly true and flat, and the plate and upper roller quite clean and polished. With the method of mounting described, it is important not to roll too much; the press should therefore be properly set by trial on an old mount. The still damp mount is then laid on the plate, and a piece of cardboard laid on it. The press is then turned. On passing out, the mount should be reversed, so as to roll it the same way. Twice passing under the roller should be sufficient. The print should appear polished and even, and slightly sunk into the mount. The outline of the print should also be perceptible on the back of the mount if the rolling has been properly done. The prints after rolling must be dried under pressure. This may be done by piling them between two flat boards with a weight at the top, a sheet of blotting-paper being placed between each mount. The above method will yield results quite equal to those produced by professional mounters.

The following causes of failure may be noted:—

The print, when pressed down on the mount, is inclined to rise in blisters, and does not adhere readily. This is caused by excess of moisture in the mount or print, or by an insufficient quantity of glue on the print.

The print tears or slips in mounting. This may result from the mount or print being too wet, combined with an excess of glue on the print, or from an excess of glue, and the print being rather over damped, the mount, at the same time, being too dry. The tearing up of the print may also result from the press being out of order; *i.e.*, the plate not perfectly flat and polished. The latter defect is readily detected.

The print comes partly off the mount on drying, or does not adhere firmly. This failure is caused by the print being insufficiently glued, or too much rolled. Repeated or excessively heavy rolling, especially when there is much moisture present, seems to press the glue into the pores of the mount.

Every particle of glue may be made to disappear by repeated rolling.

The process, from the above description, may appear troublesome and complicated, but it really is not so; it is a most convenient method, and, with a little practice, perfectly certain and easy. The print will never separate from the mount, and the mount does not cockle in the slightest degree, the mount being used in a slightly moister condition than the print. After rolling they are probably in the same state exactly as regards moisture, and hence there is no cockling. For mounting prints in an album this process with glue is the best, as a very slight moistening of the glue is sufficient to secure adhesion, whereby the print is only very little expanded, and the cockling that results is almost inappreciable.

MANIPULATING MONSTER NEGATIVES.

Referring to our recent remarks on the manipulation of plates thirty-seven inches by twenty-four, of which Mr. Restall's fine picture of the marble group of "The Last Supper," now in the exhibition, is a sample, that gentleman gives some very interesting and instructive details of his operations. He says:—

If it will interest or be of service to my brother photographers to know how I manipulated, the following will explain.

In the first place, I had the sculpture removed from a large shed into the factory yard, and placed facing the east. This was no easy matter, requiring the united efforts of half a dozen men with levers and rollers. After carefully examining my work, I caused a shed to be built, entirely enclosing the sculpture, like an immense box: length thirty feet, height eight feet, width fifteen feet, with flat top, all of wood, the sculpture forming one end, and a large tarpaulin the other, for the convenience of getting in and out. In this state all was total darkness.

I then began by letting in a flood of light from different parts until I had produced what I considered the best effect. But here one of the greatest difficulties presented itself, in fact, one that I thought I never should have overcome. You must understand that the sculpture is set back in an immense marble frame, some six or seven inches deep. Now when I had the best effect of relief, this cast a deep shadow half-way down the picture, as keen as the shadow cast from sunlight, only much stronger, owing to the absence of light from any other source. I tried tilting the sculpture, and all this was the work of time, requiring six men with levers as before, but eventually I had it brought back to the perpendicular, and was obliged to fall back upon reflection. For a long time I could not get reflected light strong enough to overcome the shadow caused by direct light, but eventually I succeeded. The result you have before you in the accompanying outline will explain more fully.

Before taking the thirty-seven inch negatives, I took a number on eighteen inch plates, just to make sure that all was to my satisfaction. You would be astonished what a great difference an apparently trifling alteration made. I have some eighteen inch plates that came as black as ink under the table, in fact, bare glass; but this I overcame by reflected light; also the remainder was a very simple affair. Having been in North Wales the whole of the summer, working eighteen and twenty-four inch plates, which I purpose sending soon for your opinion, I found no difficulty in working thirty-seven inch plates, at least, none but what with a determination might be overcome by anyone.

Although I manipulated in the presence of one of our oldest photographers, Mr. Johnstone, of this town, who asked, as a favour, to see it done, the only assistance I had, photographically, was from my little boy, a lad twelve years old. After well cleaning the plate, I folded up a clean cloth into a square pad. This I laid upon my left hand, and upon this balanced the large plate. I then took a large bottle of collodion, about sixty ounces, and poured about one and a-half pounds of collodion upon the upper edge. I then handed the bottle to my boy, who gave me a clean empty one with a large glass funnel; into this I poured the surplus collodion, not to be used for that purpose again. By this time my left arm began to cry out for help, so that I had to bring my elbow down to my side for support, and, as soon as possible, bring the right hand into use.

The plate was then laid, *face up*, in a large wood trough lined with gutta-percha, containing about four gallons of nitrate solution (I need scarcely say properly filtered, &c.) Presently I lifted the plate carefully out, but the suction was very great. I then carefully laid the plate in dark slide, having previously placed pieces of filtering paper for it to rest upon. I was then ready for exposure number one. I need scarcely tell you that by this time I was full of hope, in fact, fear never enters my dark room. I soon had dark slide in its place; but judge of my feelings, upon pulling up the shutter, to see the beautiful yellow film that had cost me so much trouble, time, and money, sticking in long narrow ribbons to the same! How I longed for a sort of peephole, to see what was the amount of damage done! However, I exposed, for I thought that perhaps there was enough left to see if all came sharp, and how long to expose the next, which it certainly did, so that I lost nothing by it.

You must understand, I had laid the dark slide flat down on a table, and held the plate by the two end corners; but, as I afterwards found, the weight of glass—thirty-two ounce plate—had caused it to bend to such an extent that it touched the shutter, and there clung like a sucker, with what result you know. I need scarcely say I stood the slide nearly upright, resting against the wall, when I put the second plate in.

To develop, I resorted to the same method as for coating with collodion. I have great horror of developing in a dish. I poured the developer from a jug holding about a quart along one side, and the next instant gave the jug to my boy, who had ready another of clean water. When thoroughly developed, I washed and stood the plate up, for I was glad to rest a moment. After examining the result, I carefully intensified with pyro and citric acid, fixed, and washed as usual.

I find it almost impossible to varnish plates this size before the fire—at least, before an ordinary house fire—so that I would advise a self-drying varnish, with such solvent as chloroform or benzole, unless you have the same convenience as I had, viz., the use of a japanner's stove, which is, in reality, a room heated to about 200°. I had nothing to do but to leave the negative resting upon a sort of tressel for about twenty minutes, go inside, and hold the plate same as for collodion, and pour on the varnish in the usual way. I then left all the negatives in this room for several hours. The result is a perfectly even, hard, glassy coat of varnish.

You are quite right as to the focal length of lens employed, at least, near enough; the actual focus was forty-eight inches.

I think I have now almost exhausted the subject, and I have no doubt many will say it was not worth writing about; but if anything I have said is of use only to one, my purpose is served. There are a number of minor difficulties which I would mention, but as they are now all over, I only remember them, and wonder how I could have been so stupid not to have foreseen them.—With best respects, believe me, dear sir, yours truly,

George Restall.

THE EXHIBITION OF PHOTOGRAPHS IN CONDUIT STREET.

As we have already indicated, in the greater proportion of the portraits exhibited a higher aim—by which we mean more specific attempt at pictorial character—is manifested in the present exhibition than has been apparent in any previous exhibition. The tendency in this direction was manifested in the display of last year; but the intention perceptible in that exhibition has approximated to fruition in this. Another satisfactory circumstance to be noted in connection with this part of the subject is the fact that much less retouching is apparent, either on the negative or the print, than was manifest in many of the pictures shown last year.

We congratulate the exhibitors on this fact; but, in doing so, we do it with this qualification or explanation: we by no means condemn retouching, on either negative or print, if it can be used to secure higher results in truth or beauty than can be secured by unsophisticated photography. If the inherent shortcomings of photography, chemical or optical, fail in doing justice to a subject—if, in translating colour into monochrome, the peculiarities of a sitter be exaggerated; the accidental or natural and almost imperceptible blemish be rendered by obtrusive disfigurement; or if the varied planes in the subject involve imperfect definition—then efficient retouching is not merely permissible, but desirable. But, as we have before insisted, success is the touchstone of legitimacy. He who lays incapable hands upon negative or print is guilty of folly which must result in readily detected failure; he produces a mongrel issue which ceases to be photography, and is disowned by art. The highest triumph is attained where technical skill, governed by artistic knowledge, produces a result which, if not absolutely perfect, at least so modifies or masks the shortcomings to which we have referred that they cease to mar the truth of likeness or the beauty of the picture.

The gain apparent in this exhibition is not due to the prevalence of questionable means, but to the manifest higher skill exercised. Besides a more complete mastery of technical appliances, there is a bolder conception, a better knowledge of chiaroscuro and of the pictorial charms it can lend to portraiture, and, in many instances, a successful attempt to secure character and expression. If even the charge of errors of excess in chiaroscuro and expression made by the *Times* critic were just, we should regard it as in some degree a satisfactory indication of the increased aim to secure pictorial effect. Of old the charge against photographic portraiture was that it was mean, soulless, commonplace, and essentially wanting in pictorial value. Errors of excess will soon correct themselves, and a solid gain will be the result. But, in the majority of instances, we are struck with the fact that where we can bring the touchstone of personal knowledge to bear, we have in this exhibition examples of portraiture scarcely failing in any quality of excellence—admirable pictures and perfect likenesses. The portrait of Mr. S. C. Hall—by Messrs. Robinson and Cherrill—for example, resembles, as we have before said, a very fine mezzotint engraving; and, as a likeness, is at once easy, natural, pleasing, and dignified. Mr. Blanchard's likeness of Mr. Proctor, a well-known artist, is a perfect likeness which reflects the genial soul in the face. Messrs. Fradelle and Leach have some equal successes in this direction, notably portraits, in every way admirable, of Archbishop Manning and Mr. McCullagh Torrens, M.P. Similar facts might easily be noted of a large number of other portraits in the exhibition.

The large portrait studies in costume by Col. Stuart Wortley, after the manner of Holbein, Vandyke, and Reynolds, are exceedingly fine, and much in advance of anything previous in photography similarly treated. The portraits by Mr. Slingsby have excellent pictorial qualities; they are, for the most part, good in composition, dignified in pose, rich, and well modelled. Mr. Briggs shows portraits with similar qualities; and one of a young lady in profile is especially pleasing in expression and general treatment. Mr. Ashdown, who is a large exhibitor of portraits and portrait studies, has some very fine examples; his collection would have been in every way admirable but for a few somewhat coarse and spotty pictures. The large collection of bold heads by Lafosse, of Manchester, contains many really fine heads; a little heaviness and blackness in the printing is rendered more striking by the broad white margins, but in character and expression many of the pictures—especially some studies of Eastern heads—are very successful indeed. Mr. Fry's Salomonesque portraits possess many excellent qualities, but in some of them the aim at brilliancy has been carried to the verge of chalkiness. They suffer somewhat from scattered hanging in proximity that scarcely does them justice. A portrait of a lady is very charming in expression, and is delicately modelled. Some large portraits of public men by Wilson and Beadell, although not bad, fall below the high average of which we have been speaking, both in technical and artistic qualities. Mr. B. J. Edwards exhibits very little, but a large Salomonesque portrait has many good qualities. Mr. Fitch, an amateur, exhibits many portraits in the style, which will compete with professional portraiture.

Mr. Sarony's two frames of cabinet portraits would demand laudatory notice, if only as those of the first portraitist who has adopted the carbon process, in which they are a complete success. But they are in every respect very admirable portraits: delicate, brilliant, well modelled, and, for variety of effective posing, superior to most of the collections in the exhibition. As carbon prints they are very fine, and furnish illustrations of the possibility of securing a perfectly matt or highly-glazed or "enamelled" surface in this mode of printing.

In a style of portraiture with characteristics distinct from the class of which we have spoken as prevailing, Mr. Cocking has some very fine examples. These are large vignette heads, bold, solid, and well modelled, but without the forcible chiaroscuro of the Salomonesque portraits. By means of the skilful masking which Mr. Cocking some time ago explained, the artistic qualities of the pictures have been enhanced without other aid than that of the pencil of light. Mr. Lombardi, of Brighton, exhibits some exceedingly delicate and well modelled large portraits, displaying very fine taste. A frame of cabinet portraits, consisting chiefly of fine solid vignette heads, is exhibited by Mr. McAndrew; and Mr. Lothian, of Edinburgh, exhibits some good pictures of similar character.

Noticeable amongst the portraits are many very pleasing examples of happy likenesses of children. A frame of cabinet portraits by Messrs. Robinson and Cherrill, consisting entirely of children, is very charming in pose, expression, and pictorial rendering. Amongst Mr. Blanchard's ten by eight pictures are some pretty children, rendered with rare tenderness and delicacy. Mr. Rejlander has also been exceedingly happy in this respect, and exhibits some fine examples of arch, sunny, and thoughtful little heads, manifestly good likenesses, and choice pictures. Messrs. A. and E. Seeley and Miss Pritchard also exhibit charming examples of child portraiture.

Of special processes in portraiture the variety is not great, but the examples are good. *Facile princeps* in photo-crayons, Mr. Burgess undoubtedly takes rank. His specimens, "A Group of Children" (No. 11), and specimens 171 and 172, are well worth the attention of those interested in that process. Messrs. Bullock Brothers and Mr. Slingsby have some good examples by the same process. Messrs. Vandyke and Brown exhibit some good examples, and a few that are too cold in colour. Mr. A. Ford Smith's examples of this style are not so successful as his other portraits; his photo-crayons are coarse and bad in colour. Mr. Gillo exhibits a large number of collodion enlargements transferred to paper; many of these are exceedingly successful and satisfactory. Mr. Burgess' Eburneum portraits are, as usual, very fine. An uncoloured portrait on ivory by Mr. B. J. Edwards is in every way satisfactory.

There are not many uncoloured life-size enlargements exhibited; those by Mr. Mayall, quite untouched, are amongst the most perfect examples of solar camera work we have seen, or can hope to see.

Amongst the exhibitors of portraits—all possessing some points of excellence, but for detailed notice of which we have not space—we may mention Mr. Downer, whose work is always excellent; Mr. Reutlinger, whose admirable cabinet pictures are published and well known; Mr. Bowen, Mr. Wane, Mr. Watkins, Mr. Hooper, Mr. Redin, Mr. White, Mr. Hewitt, Mr. Grant, and some others.

The higher pictorial aim manifest in portraiture is not less apparent in the landscapes exhibited, and is especially seen in the attempts to infuse a feeling of space and atmosphere into the renderings of scenery and in the universality cloud effects in place of white paper or shaded flat tints for skies. It is the greater prevalence and the greater success of the effort in this direction which we especially note. The introduction of clouded skies has, of course, been a feature in photography since the early days of combination printing; and many years ago Mr. Samuel Fry was one of the staunchest advocates of the practice, which was then, as it is now, challenged on the score of natural truth. A fair answer at any time is, we conceive, that a badly managed sky from natural clouds is better than a patch of white paper, which is neither true nor beautiful.

Who for a moment could tolerate even the very fine landscapes exhibited by Messrs. Robinson and Cherrill with patches of white paper as skies, after seeing them in their present form? The dozen of landscapes, fifteen inches by ten, which these gentlemen show, possess unusual beauty and interest in themselves; generally fine scenery, in several cases figures most happily introduced; in all cases well chosen, well lighted, admirably photographed, and of singularly rich tone, they could not fail to be regarded, under any circumstances, as unusually fine landscape photographs. But now they are something much more than this: they are, in virtue of their completeness in natural truth, as well as in artistic composition, exceedingly noble *pictures*. Never before, perhaps, were such grand masses of cloud secured and introduced with so much skill and judgment into photographs. Where all are perfect, it is difficult to particularize; but we may especially mention "Entomologists," a landscape and figures, the latter giving the title, "The Edge of the Wood," and "On the Common," as full of truth, and very fine in composition. All the pictures are full of light and air; but the sea view, "6.30 p.m.," with grand fan-like rays of the setting sun bursting from behind the clouds, is unusually luminous, and a splendid example of breadth.

But the rendering of cloud effects has taken a different position at this exhibition than has been dreamed of before. Here we have them, not simply as parts of pictures, but as practically and alone constituting the picture. The few fine large instantaneous pictures of Le Gray, which were the wonder and admiration of photographers a dozen or fifteen years ago, and have often caused regrets that nothing like them had been attempted in the later days of the art, are altogether eclipsed by the pictures of similar class by Col. Stuart Wortley. The series exhibited consists of nine pictures, on plates sixteen inches by twelve, the intent of the greater portion of them being described by a poetical quotation. The pictures are chiefly of moonlight effects, by which it should be understood that it is by no means suggested that the negatives were produced by moonlight. It is one of the misfortunes of photographic criticism that the means of producing the results must perpetually obtrude itself, even during the consideration of the pictorial qualities only. That these pictures were produced by sunlight of course will never be doubted, and that with that light they were taken with the best appliances and rare skill scarcely needs affirming. Of an important novelty in the developer employed, we may remark, in passing, our readers may expect details in our forthcoming YEAR-BOOK, to which Col. Wortley has kindly promised to communicate details. But in looking at such pictures as these, we feel anxious to get away from the consideration of the mechanical appliances employed. How does it concern the looker-on to consider processes when he is in presence of the mystic beauty and solemn grandeur of that sky, with arch upon arch of clouds radiating, as it were, from the hidden source of light, surmounting the barely suggested or dimly made-out bridge and waters, all wonderfully illustrating the aptly quoted line from Longfellow's fine lyric, commencing, "I stood on the bridge at midnight." The "broken reflections" of the moon mentioned by the poet are rendered with singular felicity in the picture; and in this, as in the other night pictures, there is a transparency in the blackness of the shadows, a sense of boundless space, which, in nature, lends a strange charm to night on the waters. Longfellow has furnished a quotation to another singularly effective picture, the lines appended being—

> "All the air was white with moonlight,
> All the water black with shadow."

A strangely stormy sky, with the clouds fiercely driving over the moon like messengers of wrath. We have rarely seen the sense of motion—resistless, rapid motion—more forcibly conveyed. We have not space to enter into detailed comment upon each picture; suffice it to say that each picture is full of beauty and poetry. The wondrous masses of cloud of varied form, at once apparently solid in form and unsubstantial in substance, and fine and varied chiaroscuro secured, give a rare grandeur to the whole series.

A series of studies of clouds, skilfully secured during the September gales by Mr. Vernon Heath, are full of beauty of a value not readily to be over-stated as studies to painters, some of whom are apt to forget that clouds have well-modelled forms rendered by fine light and shade. Mr. Whiting has a delicate study of clouds, and there are some by other photographers. Of the pictures in which clouds are admirably introduced and play a necessary, but not pre-eminent, part in the pictorial effect, we shall speak another week.

PHOTOGRAPHIC CLICHES ON PAPER.

M. **ALEXANDRE DE POKORSKY-IORD**, of Tchernigoff, Russia, communicates to the *Moniteur de la Photographie* an interesting letter on the employment of prepared paper in the production both of negative and positive photographs. Paper negatives, he states, have been regarded with disfavour for many reasons—as for instance, their insensitiveness, uncertainty, &c.—but, on the other hand, they may be said to possess many advantages. When glass plates are used, not only are the results more fragile, but their production is attended by bulky and inconvenient necessaries (collodion and other chemicals), and these present grave difficulties to the traveller, who, so long as he obtains a faithful reproduction, is often indifferent as to its artistic and finished appearance. A simple, straightforward method, which M. Pokorsky has followed with much success, and which may be infallibly relied upon, is the following.

Negative Paper.—A sheet of salted—or better still, amorphous albuminized—paper is immersed in a solution compounded in the following proportions:—

Clarified serum	100	cubic cents.
Common salt	2	grammes
Citric acid	2	„
Glycerine	6	„
Iodide of potassium ...	1	gramme
Bromide of potassium ...	0.25	„

The sheet remains ten minutes in the liquid, and is then dried; thus prepared it may be preserved for a considerable period. This chloro-iodized paper is sensitized in a bath thus composed:—

Clarified serum	100	cubic cents.
Nitrate of silver	4	grammes
Citric acid	4	„

The serum is divided into equal portions, and the nitrate of silver and citric acid separately dissolved in each. When the two solutions are afterwards mixed, a precipitate will be formed by the chlorides contained in the serum, but filtration through paper will be sufficient to render the bath suitable for sensitizing the paper, and this, on removal, is dried in the dark without being washed.

Thus prepared, the paper becomes extremely sensitive, and retains this sensitiveness unimpaired for upwards of a month.

As regards exposure, it must be avowed that the same is by no means short, inasmuch as from fifteen to thirty minutes are generally requisite with a Dallmeyer triplet; one thing, however, is certain, viz., that the negative will never be over-exposed, even if two or three hours are allowed to transpire, and thus no difficulty will be experienced in judging the exposure, as the only thing to be avoided is not to make the same too short. The *clichés* need not be developed at once, but may be kept for a period of thirty days if necessary. The solution for this purpose is made up of—

Water	500	cubic cents.
Gallic acid...	0.5	gramme
Pyrogallic acid	0.1	,,

When the acids have been dissolved, two or three centigrammes of acetate of lead are added, and the liquid, thus rendered turbid, is again clarified by the additions of a few drops of a saturated solution of citric acid, three to five drops of this liquid being added beyond that actually necessary to render the bath transparent. Under no consideration is nitrate of silver to be mixed with the solution.

The development of the *clichés* proceeds very quickly and without causing stains or spots of any kind; the developing action is allowed to proceed very far, in order that the details may not suffer in the operation of fixing, and that they are sufficiently prominent when viewed by transmitted light. The negatives are subsequently well washed, and fixed in a bath of—

Water	500	cubic cents.
Hyposulphite of soda ...	60	grammes
Acetate of soda	4	,,
Sulphocyanide of ammonium	12	,,
Chloride of gold	0.25	gramme

An immersion of ten minutes suffices for the purpose of fixing, and the *clichés* are then washed and dried. They are afterwards waxed by means of paraffin, and the excess of grease expelled by placing them between two sheets of paper, and passing over them a heated iron. For two years M. Pokorsky has employed this mode of producing negatives, and during that time has not experienced an unsuccessful result. For changing the sensitive sheet he has recourse to a dark portfolio, constructed by himself, which he proposes to describe at some future period.

Positive paper.—The serum silver bath may be employed with much advantage in the production of positive prints. A sheet of chloro-albuminized paper floated upon the bath for five minutes becomes endowed with exceedingly sensitive qualities, which it retains for the space of a month; at the end of that period an exposure of thirty to thirty-five seconds under a glass negative placed in the shade suffices to yield a print, if treated in the manner above described, the picture being perfectly free from yellowness in the whites. From this it will be seen that the paper is very suitable for travelling, and is, moreover, of a very economical description, from the fact that a four per cent. silver bath amply suffices to render it sensitive. It is also applicable for enlargements, and for copies of engravings, designs, and maps printed direct, without the employment of a lens.

This last application merits particular consideration, especially by those engaged upon scientific or zoological researches. Drawings are often indispensable, and works containing drawings are expensive; with this paper copies may be made at a reasonable cost, which, if not of a perfectly artistic and finished character, are, nevertheless, exact copies of the originals, and sufficiently good for the purpose.

Printing with this description of paper, M. Pokorsky designates as *Albotype*, and he recommends the process especially for the production of designs traced in white lines upon a black ground. Pictures of this description are easily produced by printing from a positive *cliché* obtained from the paper negative.

In conclusion, M. Pokorsky does not lay claim to being the first to employ serum for the preparation of sensitive paper, but publishes his *modus operandi* in the hope that others may profit by his experience.

PRACTICAL HINTS ON RETOUCHING NEGATIVES.

BY G. CROUGHTON.—CHAPTER III.

I HAVE now arrived at the most difficult part of my subject, both as regards the manipulations upon the negative, and in conveying instruction by writing, for I could impart in half an hour's direct teaching more practical information upon the subject than could be derived from twenty written chapters; but I must endeavour to make myself as clear as possible in my descriptions.

The manipulation described in my last chapter did not require on the part of the manipulator the possession of much artistic knowledge; those I am about to describe will require a considerable amount of knowledge and skill to enable the manipulator to get the best effects, and perhaps it will not be out of place here to enumerate the qualities necessary to enable any one to become successful in retouching.

1st. The manipulator should be a good draughtsman, and thoroughly acquainted with the drawing of the facial muscles.

2nd. He must have a thorough knowledge of the printing qualities of a negative, and be able to see at a glance where improvements are required, and know what effect upon the finished print every touch put upon the negative will have.

3rd. A quick appreciation of what are natural defects that can be softened without altering the likeness, and those that must be retained to keep the characteristics of the individual.

And last, though not least, he must possess in a large degree the twin virtues, patience and perseverance.

I think the best plan will be to describe the work upon the negatives as they come before me in the course of a morning's retouching. For the last few months there have been upon an average about twenty carte-de-visite negatives that want retouching every morning. Most of these will be full length portraits, and want very little doing to; the others are vignettes and three-quarter lengths, which will want what we call working-up. Disposing of those that want the least done to first, all accidental marks upon the face and all harsh lines are worked over with colour with the point of the brush, for all colour must be put on the negative by stippling. I suppose there are very few of my readers that do not know what "stippling" is, but, for the information of those few, I may briefly say that stippling is working with the point of the brush in small dots; but in this case the dots must not only be very small, but very faint, the colour being used very sparingly, for it is always better to go over the part to be filled up two or even three times, than to try to do it at once with strong colour, for in the latter case the touching will be visible upon the print.

Some of the remaining negatives are of ladies more or less freckled; and although freckles are of all things the most difficult to remove, there is nothing very particular in the method of working them out; they must be stippled till they are made to blend with the surrounding parts, but as they will mostly be found closer together on that part of the nose between the eyebrows, great care must be taken to keep the drawing, as the least alteration here will materially alter the likeness.

By way of illustrating what can be done by retouching, I will conclude this part of my subject by describing the manipulations upon two negatives that both require a deal of work bestowed upon them to produce prints with a proper scale of tones. In trying to explain what is meant by a proper scale of tones, I hope I may be pardoned for using that somewhat trite comparison, the musical scale; but it is the best for the purpose that I know, and that must be my apology. The eight notes of the gamut—or, rather, seven notes and the octave, which is a repetition of the first, but higher—in their proper places produce harmony; misplace one note, or leave it out altogether, there is at once a break in the harmony, and discord is the consequence. It is the same in a picture or portrait. We will suppose there are eight tones or tints in a face, ranging from one, the highest light, to eight, the deepest shadow; there would have to be (to get harmony and the proper gradations) six intermediate tones; leave one or more out, and your picture, like the gamut, is out of harmony.

Now, the first negative I shall describe is, in consequence of under-exposure, out of harmony; the scale of tones is broken. To keep up the comparison, the tones begin at number two or three, and some of the intermediate tones are missing. Now what is wanted is to supply, with colour skilfully applied, the tones missing. In the first place, then, commencing with the lights, I find there are no high lights; the lights all over the face have spread too much, and a flat tint half across the face is all there is, where there should be at least three tints or tones. The first thing to be done is to put on the highest lights. These are upon the forehead, the nose, and chin, these must be made two tints deeper, that is, more opaque than the surrounding parts. Next, work near these lights, gradually up to them, but still leaving them one tint higher than the colour you are putting on, and working from them, gradually blend the colour into the tint of the negative. By this means there have been two tones added to the scale. Now, taking the shadows, I find they are too much spread, and come too abruptly up to the lights; in fact, that numbers four, five, and six of the scale are missing. Now, working from the lights, and using less colour as I get nearer the deepest shadow, I supply the tones missing. I have now a negative that will be both perfect in harmony and gradation.

The other negative has been over-exposed, and the print wants depth and vigour. As we cannot take out shadows, we must add colour to build up the lights to sufficient strength to allow the shadows to print deep enough. This is done in the same way as in the former case, putting on the highest lights very strong, and working from them.

It must be understood that these two negatives are only taken by way of illustration. Of course it is best to have as little to do upon the negatives as possible; but it will show the power a skilful retoucher has over difficulties that have before been insurmountable.

And now a word of caution: Do not use much gum in the colour; if possible, do without it altogether, for if gum is used, and the printer is not very careful, the silver on the face of the paper will come off upon the retouching, and, darkening with every exposure, will eventually stop the light out altogether, and white spots upon the face are the consequence. This can be avoided by warming the negative and paper before putting them together.

Landscape negatives can be greatly improved by retouching in many ways. Natural clouds can be strengthened with the powder black-lead, as described in the second chapter. The lights upon foliage can be put on with colour, and where the leaves of a tree in the forground cut against the sky they can be scraped out with great effect, but, of course, great care must be taken to keep the peculiar markings of the foliage. Lights upon water can also be put in, and reflections also; in fact, I may say, although I may be accused of partiality, that there is scarcely any limit to what can be effected by retouching.

The Sarony photo-crayons are greatly improved by retouching the transparent positive. This is done with a colour composed of sepia, lake, and indigo, and worked upon in the same manner as you would a paper print. The hatching can be by this means taken quite up to the head, and, if the backing is to be tinted white, can be put upon the high lights of the face, the ball of the eye, lace, &c.

And now, in concluding these chapters, which have been written under peculiar difficulties, I must apologise for the meagreness of the descriptions; but, as I have said before, I could teach anyone better in a few simple lessons than with a whole folio of writings. I have endeavoured to place before my readers my method of working in as plain a manner as possible, and if my experience has been of any use to one of my readers, my end has been attained. If there are any questions to answer, or explanations wanted, I shall always feel a pleasure in answering them in the pages of the Photographic News.

Correspondence.

A SLIGHT MISTAKE.

Sir,—I would just call the attention of Mr. Rejlander to a slight mistake which he has made in connection with a title appended to one of his inimitable productions, exhibited during the last few days at the collection of photographic works of art in Conduit Street. I give it (the title) verbatim: "'Let patience have her perfect work.' St. Paul." If I mistake not, such a phrase does not so much as once occur in the writings of that excellent man, or (as I should say) apostle. But such a quotation is to be found in the former part of the fourth verse of the first chapter of the General Epistle of St. James.—Believe me, yours truly, Observer.

November 19, 1869.

MR. BLAIR'S SUGGESTION FOR ACCELERATING EXPOSURES.

Sir,—Seeing the article in this week's issue on acceleration of exposures has induced me to give my experience on the matter.

My way of proceeding is this. My developing window in the dark room is made of two sliding frames of yellow glass, and a frame permanently fixed, each pane made darker in tone, the outside light yellow, No. 2 dark yellow, and No. 3 dark orange. Now, when I have exposed a plate, and after it is partially developed, I slide back one window, and hold the plate very near the glass. Should the detail not come out as much as I want, I open No. 2, and find that I get such detail in the negative that would not have appeared if I had developed the plate with the whole three lights closed. I mentioned the effect three years since to Mr. Johnson, then of Red Lion Square, who, I think, rather doubted my assertion.

I also, in giving a description of my out-door van in the *British Journal*, tried to explain my plan of sliding windows to get further detail out of the exposure. The idea was suggested thus. My dark room window at Sheffield being N.E., the sun at early morning was full on the glass, the baths standing immediately opposite. I had the dark orange added to the outside yellow glass, to keep the plates from fogging while draining. Now, as the sun went down, and Sheffield having a very dark and murky atmosphere, I found I could not see towards the close of the day to develop my picture, so opened or slid back the orange glass, and found by so doing that more detail appeared than did when the orange glass was closed. It then struck me to place a medium piece of yellow glass between, also to slide. I did so, and found, as I before said, much more detail or half-tone appear than would do if the orange glass was closed. I then applied it to out-door practice, and found its beneficent result, making a picture that had, perhaps, been slightly under-exposed, all that could be desired, without another trial, in some cases impossible, or in others most difficult. I have applied the principle to a dark room in London, which I shall be happy to show you, and give further explanation, if you wish. The principle can no doubt be further developed by abler men than myself. I append my address in town, so that, if you feel inclined, I shall be happy to give you practical illustration of what I have written.—I am, sir, yours respectfully, James Tulley.

[We shall have the pleasure of seeing you when in town. —Ed.]

ACCELERATION BY GENERAL ACTION OF LIGHT.

Sir,—Mr. Blair has started a subject which will prove very interesting for some time to come; and if the result sought for is obtained, there will be a general rejoicing of photographers in the four quarters of the globe.

I think it was Becquerel who started the idea of the continuing action of yellow light, and Mr. Blair, I presume, goes farther, and believes the same action to take place with white or actinic light.

We all know that if a negative when completed, save the fixing, is allowed to dry in diffused daylight before the cyanide is applied, it is denser than it would have been if fixed on completion of developing; but I believe no detail not brought out by the developer makes its appearance, and that is just what is sought for.

If Becquerel's idea is correct, it would be an interesting experiment to have a camera glazed with as much non-actinic yellow glass as could be got into the frame of it as possible, so that the plate gets an additional dose of yellow light during exposure; or possibly the light may be made actinic to a certain extent, and its action probably might be confined to the parts of the image in which any actinic impression is going on, on the same principle that the developer brings out the image; *i.e.*, decomposes and deposits the silver only on the parts acted on by light.

I have always been sanguine of a vastly accelerated actinic action being discovered by the use of light in a different manner to what it has hitherto been.—I am, dear sir, yours truly, Wm. Bartholomew.

Egham, November 22nd, 1869.

A "NATURALIST'S" CRITICISM OF NATURAL EFFECTS.

Sir,—Will you permit me a few words on the remarks of a "naturalist" critic, who has studied nature, but does not believe in the genuineness of Col. Wortley's sky photographs?

There are but few, I presume, among the readers of the News who are unacquainted with the story of the old lady whose son, having returned from a foreign voyage, was at the opening of the tale engaged in describing to his admiring parent the scenes he had witnessed in strange and distant lands, and the adventures which had befallen him whilst traversing the stormy seas. "Drawing the long bow," with a seaman's love of fun, the youth spoke of mountains of sugar and rivers of rum; of mighty giants and diminutive dwarfs; of huge winged animals, and of sea monsters frightful to behold. To these recitals the old lady listened with breathless attention. That she placed implicit reliance in her son's truthfulness was made evident by sundry "Hems!" "Ahs!" and other approving ejaculations, until the sailor's powers of invention were exhausted, and he turned into a more truthful track by making some allusion to a queer kind of fish that possessed the power to fly like a swallow. At this recital the credulity of the old lady gave way, and bluntly did she put the "break" on her son's narrative with an exclamation: "Hold thee lies, Jack; mountains of sugar and rivers of rum there mirt be, but fish that flee there never can be."

Among the incidents which make up everyday life, facts often follow so closely on the heels of fiction that, as long as the novelist keeps the produce of his inventive faculties within natural bounds, he may hope to see, sooner or later, his wildest visions realized by a practical fulfilment. Accept as an example the anecdote above quoted, that illustrates a threadbare adage, which describes credulity to be an offspring of ignorance, the ignorance here alluded to implying a lack of education. Yet, strange to relate, we, who are blessed with some amount of education, may, in this nineteenth century, stand in a position as ridiculous as that occupied by the old lady, and as readily as she drank in error, we can believe in fiction as wild as mountains of sugar and rivers of rum, whilst truths are thrust aside as improbabilities, whimsical, or absurd.

In the earlier days of scientific enquiry, learning of all kinds was confined within the walls of monasteries, and the monks found, in their optical and chemical experiments, agents of potent influence that held the gaping laity spell-bound as they gazed on the supposed miracles. Those days of ignorance have, however, long since passed away, and in their place we have an age so enlightened that, although we know all about "science and them sort of things," yet we are very prone, among other whimsicalities, to build up mountains of sugar, in the form of spirits who delight in turning chairs and tables, or in playing banjos in shut-up cabinets; spirits who cannot forsake home, but are ever at hand to give orders to left-behind wives or other kindred. More absurd still, we look with an eye of faith toward Yankee land, and see in that region of wonders a son of the "black art," with hand on camera, and eyes rolling in manner best approved by spirits. "One, two, three!" The ghost of one's grandmother, or mother-in-law, as the case might be, stalks quietly forward, and takes its place by the side of the unsuspecting sitter. "Four, five, six!" The ghostly image is taken off, and the sitter, at the same time, is taken in; the plate, on examination, shows up, in addition to him who visibly sat, the faint image of "your late wife." "Oh, there she is!" if your imagination can but paint her as she was. But enough; I for one put down this spiritual nonsense in its every feature as bosh of the most ridiculous kind.

I wonder much whether the writer of the following lines, which I extract from the pages of a contemporary, is equally sceptical in things so unnatural as I have briefly alluded to. If so, I feel bound to express regret that, as a "naturalist" who has not wasted his time in studying spirit-rapping and "medium" nonsense, he has not made himself better acquainted with that nature he pretends to interpret. The quotation runs thus:—

"Col. Wortley's moonlight pictures are taken by sunlight, of course" (of course they were); "but what I should like to know is, by what means does he obtain his skies? His clouds are marvellous, without doubt; but I question whether they could have been taken from nature. Might such effects not be obtained by taking the sea on one negative, and the clouds on another, the latter being copied from a drawing or painting? I presume the pictures referred to were taken in this way."

"Naturalist," who, of course, knows all about the habits of "gulls," then proceeds to pitch into Mr. Robinson, and winds up a wondrous epistle with a grandly constructed narrative, which concludes sublimely thus: "Verily, great is (photographic) humbug, and very numerous are its prophets.—Yours truly,—A Naturalist."

Is there any other way of defining that word naturalist than that applied by old Johnson and other authorities on the interpretation of words? A naturalist, in the ordinary meaning of the term, should be acquainted with clouds. Perhaps "Naturalist" means joking. Most probably "Naturalist" is as ignorant of nature as he is of photography, otherwise he could never have fallen into the unpardonable error concerning Col. Wortley's photographs.

Of Mr. Robinson's gulls I say no more than just to observe that the "foreign gulls" called kittiwakes are often seen on our coast; and to all concerned I say, enquire of Mr. Blanchard whether he has not photographed life as lively as is usually put forth by gulls when they are dipping for fish.

Concerning Col. Wortley's pictures I can speak with confidence. During the autumn just passed, Col. Wortley has taken several dozen of cloud subjects. The negatives were placed into my hands, and, with my own hands, in the usual meaning of the term, I printed off the copies. The plates were received by me in the ordinary way of business. I was told nothing of Col. Wortley's intention of exhibiting. The negatives were quite untouched, and the printing, from first to last, was from single negatives. Who but a naturalist belonging to a guess-at-able order could have supposed that the hand of a painter can be more cunning than that of Dame Nature? Who but such could, with so much egotism, pronounce an insulting verdict on things he has proved himself so grossly ignorant of? Most assuredly can it be said that poor photographers have a hard fight to stem the torrent of ignorance and envy. One consolation, however, remains to them. Although critics may seem to bite, their ignorance often exposes the fact of their being armed with false teeth. These, from time to time, I shall do my best to show up. Even a screamer, by a glimmer light, can sometimes startle, and a false critic convey false impressions to the half-initiated. W. T. Bovey.

MODES OF ENLARGEMENT.

Dear Sir,—It appears to me, judging from the specimens exhibited at Conduit Street, that very little improvement has been made as regards enlargement, the untouched proofs showing the same defects that have always existed, and which is doubtless owing to the enlargement of the structure of the collodion in the negative, making the lines rough, and the shadows, especially the half-tones, spotty and wanting in harmony. This is particularly the case in enlargements from landscape negatives, from their being made up of lines and points which are separated so far in the enlargement as to destroy the continuity of the shadows and half-tones. Perhaps a hint might be taken from Mr. Blair's communication in the last number of the News which might remedy this.

I think that where the size required is not too large, a negative taken in an enlarging camera from a perfect positive of the original is superior to a solar camera enlargement direct on paper.

I send you a specimen enlarged about fifteen years ago by means of the camera I described in the First Volume of the News. It is, as you perceive, a transparent positive on collodion transferred to paper. The proof from the original negative. taken by a friend about eighteen years ago, was toned by Le Gray's hypo toning bath.

Why should Messrs. Robinson and Cherrill's "Sea-Gulls" be made up of dodges? Probably the only dodge is printing the gulls from a separate negative.

If a wave breaking on the shore can be taken by instantaneous photography, I think a flock of gulls poised over the sea could also be taken; the motion is not nearly so rapid, and such eminently skilful photographers would well know how to remedy want of sharpness in the wings where defective.—Believe me, yours very truly, Thomas Barrett.

Mead Vale, Red Hill, 22nd November, 1869.

[The example of enlarging with which our correspondent favours us is very interesting and satisfactory.—Ed.]

SILVER PIGMENT FOR RETOUCHING.

Dear Sir,—In a note to my second chapter, you suggest that a precipitate of silver by pyrogallic acid would answer the purpose of the ground negative films. Would you allow me to remark that I have tried that and various other methods, but with the conclusion that there is nothing that answers the purpose so well as the film itself? This is easily explained, for the colour produced by a precipitate of silver by pyro is purple black, and does not match the negatives so well as some mixtures of the ordinary water colours I have used; but the colour of the powdered film is so exactly the tint of the negative that the touching cannot be detected upon the negative except by looking upon the surface. G. Croughton.

43, *Alfred Road, Harrow Road, W.*

HISTORY OF THE COLLODION PROCESS.

Dear Sir,—I read your leader on this subject (Nov. 19) with regard to the respective claims of Archer and Le Gray. It is certain, from the evidence contained in your article, that Archer and Dr. Diamond obtained practical results with collodion on glass in the month of September 1850. How long before this Thomas Archer may have been experimenting, or perfecting his process, concerns us not: practical results were obtained by him, and confirmed by Dr. Diamond, in September 1850. I have in my library a work by Le Gray, entitled "Photographie," *published* at Paris, *without any date*, either upon the cover, the title-page, or attached to the preface. It seems as if the author and publisher had decided not to publish any date on this book. It is published by the opticians Lerebours and Secretan, and *upon the back of the cover* these persons advertise their apparatus and books, and *this advertisement bears the date September* 1852. The work appeared, therefore, at some period subsequent to September 1852, say at this date itself. In this work Le Gray claims to have been the first to apply collodion to photographie, stating that his *first experiments* on this subject, and *with paper*, commenced in 1849, *but referring to no publication.*

"In continuing these studies," he says, "I was led to apply this substance to glass, in order to obtain a greater degree of *finesse*, and I was soon in possession of an extremely rapid process, which I consigned to the end of a pamphlet which I published in 1850, and which was translated into English at the same time." This is the pamphlet stated by Mr. Tunny to have been published in London, in July 1850, by T. and W. Willets, opticians, in which, according to Archer himself, "the allusion to collodion is dismissed in three or four lines;" and the *first work* in which Le Gray gives a complete account of the collodion process on glass is that alluded to above, the date of which, discovered on the back of the cover, is *September* 1852, two years after Archer and Dr. Diamond obtained satisfactory proofs on glass with collodion, and one year and a-half after the complete publication of Archer's process.—I am, dear sir, yours truly, T. L. Phipson, PhD., F.C.S.

Putney, S.W., 24th November, 1869.

PS.—It will be seen from the above that great interest attaches to the "three or four lines" devoted to collodion in Le Gray's pamphlet of July 1850, and any person possessing this pamphlet would serve the cause of history by transmitting an exact copy of them to the Photographic News.

[A correspondent has courteously favoured us with a copy of the pamphlet in question. We shall have a few words on the subject in our next.—Ed.]

Talk in the Studio.

The Exhibition in Conduit Street.—The display of photographs in Conduit Street is still open. The crowd of persons present on Saturday last, on the evening of which day the close of the exhibition was announced, was so large that it was felt by three or four of the council present that an effort should be made to keep it open for another week, and arrangements were made that the pictures should remain on view until Saturday the 27th inst., when it must positively close. In every sense the exhibition has continued to be more successful than the most sanguine hopes entertained. Our suggestion as to the publication of a catalogue in the journal, so well carried out by Mr. Spiller, has proved a great success. Besides those delivered to members of the Society, upwards of a thousand copies had been sold to visitors up to last Saturday evening, affording a valuable reference to the pictures, and, of necessity, also proving useful in spreading a knowledge of the Society, its aims and labours.

Mr. Rejlander's Rectification.—The *Times* of last Saturday contains the following "rectification" by Mr. Rejlander of an error into which the critic had fallen:—"Rectification.—To the Editor of the *Times*.—Sir,—In your notice (the 16th inst.) of the present Photographic Exhibition I read:—'In the enlarged work there is nothing better than the head (2) of a sulky school girl, 'Kept in,' by Rejlander, in which the background is supplied by hand, the figure being photographed on glass, as in the case of Bullock's three beautiful heads already mentioned. Allow me to correct the complimentary mistake in assuring you that it is all supplied by hand (in sepia) on a faint photographic enlargement from one of my own photographs; that is the difference. 'It makes all the difference.'—I beg to remain your obedient servant, O. G. Rejlander."

Chloride of Gold.—M. Debray, in *Comptes Rendus*, says:—"It is a well-known fact that, when chloride of gold is submitted to a temperature of about 200°, it is first decomposed into protochloride of that metal and chlorine, and if the temperature still rises, into chlorine and metallic gold. It is, however, possible to obtain crystals of chloride of gold by sublimation, by the following process:—A current of chlorine gas is made to act upon gold beaten out to a thin foil (not gold-leaf), placed in a glass or porcelain tube, and heated to 300°, at which temperature the volatilization takes place, and ruddy-coloured crystals of the chloride are obtained. The author observes that Boyle was the first who stated that chloride of gold is volatile, to some extent, without dissociation.—*Chemical News.*

New Marking Ink for Linen.—M. Kuhr recommends the following preparation:—One part of hypophosphite of soda and two parts of gum arabic are dissolved in sixteen parts of distilled water. The tissue, linen or cotton, to be marked, is thoroughly moistened with this liquid, and then left to dry. After having become well dried, the following liquid, composed of one part of nitrate of silver and six parts of gum dissolved in six parts of distilled water, is used as marking-ink with a quill pen. The mixtures here described are stated to yield an indelible and very deep black-coloured ink.—*Journal of the Franklin Institute.*

To Correspondents.

R. M. G.—The subject is scarcely one for discussion. The history of the revival of the exhibitions is known sufficiently to those whom it concerns, and it is of more importance to have re-established them than to claim or apportion the credit of having secured that end. In answer to your categorical questions, the facts stand thus: Mr. Sebastian Davis proposed, and the Council of the Society agreed to, in June 1867, the holding of an "exhibition meeting," to open the following winter session, the object being, as then explained, to show the results gained during the summer by the workers in the art. In the Photographic News, July 19th following, we appealed to photographers to make the exhibition meeting the occasion for "something more than a mere display of the recent productions of the resident members of the Society," and in repeated articles urged its importance, the advocacy in question being confined to our own pages. When the occasion approached, it was found that the authorities of King's College, where the meetings were then held, were unable to extend the ordinary facilities for meeting, and that any efficient display of the pictures would be impracticable. We then proposed to the Secretary, Dr. Diamond, that the rooms in Conduit Street should be secured for the occasion, and he at once took active steps, and the consent of some other members of the Council having been secured, the proper arrangements were made. When it was found how full and satisfactory a response had been made by photographers to the appeal to contribute, it was felt that to close such a display of pictures after one exhibition would be most undesirable; and Dr. Diamond and ourselves at once saw the authorities of the rooms in Conduit Street, and made arrangements for the exhibition being kept open for a week longer. We secured reasonable terms, and, as the occasion was urgent, Dr. Diamond and ourselves accepted the responsibility of deciding on this step. The rooms were not, and are not, placed gratuitously at the disposal of the Society, either for exhibition or meeting, but the terms are reasonable and satisfactory. The success of the first experiment gave encouragement to the organization of an annual exhibition, to be continued, we hope, with the same progressive success during many years.

C. B.—In the allusion in the article to which you refer, any good plain paper is meant. We have not space in this column to publish processes in detail. There are several good plain papers in commerce sold by manufacturers and dealers, and we have published many formulæ for the preparation of such papers, to which we must refer you, unless you prefer to purchase the papers prepared for use.

Dull Weather.—We regret that we cannot tell you of any first-class London photographic firm where you could be permitted, for a consideration, to spend a week to learn the routine of the business conducted. The difficulty arises thus: it is not much use for you to spend time for such a purpose in an establishment not doing a good business; and where a good business is done there is a general indisposition to admit pupils. Possibly the Paris house you name, if you can make the arrangements, would be one of the best you could choose. 2. A second-hand lens, except of one of the best makers, is often a purchase of doubtful wisdom, and even one of the best makers may be out of date, having been superseded by modern improvements. The extra cost of certainty in excellence is wise expenditure. In asking us whether a certain lens of a modern first-class maker would be better than certain indefinitely described second-hand lenses, you must see that we cannot give an opinion, having no means of comparison; but we should never hesitate in the matter; we should decline such second-hand lenses, unless of proved excellence, and suitability to our purpose. 3. The lens you propose for cards is the best you can obtain. For cabinets, one of the A series will probably answer your purpose best. 4. With a 5D you will scarcely need a No. 4. The lenses of the D series will answer the purposes you name sufficiently well to enable you to dispense with a rapid rectilinear. The D will answer perfectly for copying. 5. The use of ground glass is not often desirable, as it obstructs much light. If necessary, stipple a portion of the glass to prevent observation from the outside. The broad Venetian blinds to which you refer are useful in some circumstances, but their value depends entirely on the circumstances in which you are placed.

A Subscriber.—We regret that we have no such list of print publishers as you require.

J. H. W.—The dry-plate pictures exhibited by Mr. England are, we presume, by the process he has before practised and published. We have heard nothing to the contrary. That to which we referred in April last was in an experimental stage, and was not, we believe, practically adopted. 2. We do not know of anyone except M. Constant who has worked gum and coffee, but his results are good. There has not been much modification or advance in dry-plate work of late; but we shall give a *resume*. Can you give us any details of the working of coffee and malt?

Photo.—The print of the "Snow-up" on the Canadian Grand Trunk line is very interesting, but we have no means whatever of judging what would be the value of the negative in this country, nor whether any English photographer or English publisher would undertake the issue of such subjects in this country. Your best plan would be to communicate with such a firm as Marion and Co., of Soho Square, or the Stereoscopic Company, Cheapside, sending them examples.

H.—Thanks for the old manual, of which we had no copy, and which will, therefore, make an acceptable addition to our collection of works connected with photography. The chapter to which you refer contains interesting details and observations, the extract from Le Gray's pamphlet being, as you will see, the same as that we published last week, and which, it seems to us, is much too vague to enable any one to produce results. Again thanks. The ink appears to answer well.

P. F. M.—The card enclosed is a sample of good work; and one who could produce fifteen or twenty similar negatives a day would be a good operator. Our Year-Book will be ready by the end of the year. To make prints transparent it is desirable to soak in hot water or a hot solution of soda, to remove all size, and then saturate with wax, varnish, or almond oil.

M. A. is disappointed in the "gull picture," and thinks it rather a successful trick than an artistic success. We have published enough theoretical comment on the picture, and as photographers generally have had an opportunity of forming their own judgment, further discussion, unless it contain practical suggestion, would become wearisome, especially as we understand some fragments of the broken negative are to be shown at a South London meeting. A sight of these will be more instructive than many conjectures.

Z. H. A.—For portraiture we should prepare plain paper with five grains of salt, and use a thirty-grain nitrate bath. 2. It is always desirable in negative work to use a large quantity of solution: it is much less easily thrown out of balance by being steadily worked than a small quantity. 3. We shall have pleasure in showing you the examples of Sarony's work and that of M. Salomon, at our residence, 36, Canonbury Park South. 4. A stock bottle of printing solution the proper printing strength will not sufficiently replenish the bath. As a rule, it is robbed more quickly of silver than of water. Suppose you are using a gallon of solution, after floating a quire of paper, add an ounce of nitrate of silver, and as much water as will make up the gallon.

H. V. (Crediton).—The sample of pyroxyline you send is of the highly explosive and insoluble kind. It is the result of using acids too strong and temperature insufficiently high. Your acids are probably a little stronger than those mentioned in the formula. Add (say) a drachm of water to each ounce of acid. The hot water in the outside dish should be at about 170°. You had better commence with a fresh sample of cotton, and throw that already treated aside. All the numbers of our earlier volumes are out of print.

D. Duncan.—Thanks. We shall have pleasure in receiving the communication. We will ascertain if the competition is still open, and let you know what steps can be taken. We will take an early occasion to try the modification of our mode of intensifying. Our chief aim was to give a *resume* of processes we had tried; but we might, if we had thought of it, have included that given by you in our columns.

G. Herbert.—We are exceedingly obliged for the copy of Le Grey's pamphlet. The appendix, we find, is the same as that we quoted from M. Humbart de Molard last week. We shall have a few words more on the subject shortly. Again thanks.

H. L. (Norwood).—We cannot speak with certainty, not having made a personal comparison; but we should give the preference, for the qualities named, to No. 1.

Letter-press.—Any mode of artificial lighting for a beautifully decorated interior will, we fear, prove very unsatisfactory, because of the difficulty, with such lighting, of getting diffusion or reflection. We should prefer trying a long exposure, with such light as you can get through the windows. Even and uniform illumination of an interior is most difficult, if not impossible, to secure, with any artificial light.

Northern Photo.—You have made decided progress, and achieved much success. We shall notice the pictures shortly. Why did you not send them to the Photographic Exhibition.

Z.—The "Early Morning" picture of Col. Stuart Wortley was taken about 7 A.M. The sun appearing at the top of the picture by no means indicates that it is near the zenith: it is less than 20° above the horizon. None of his pictures are exhibited as sunsets. Mr. Thurston Thompson has been dead upwards of twelve months, and, of course, does not exhibit. The rooms are not granted gratuitously. The statements are examples of many such blunders.

J. G. Tunny.—Received just as we were going to press. In our next.

E. Cocking.—In our next.

Thomas Gulliver.—Duly recieved. Thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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THE ORIGIN OF THE COLLODION PROCESS.

On another page we print a letter from Mr. Tunny, in which he gives a full and able summary of the facts which constitute the history of the discovery and introduction of the collodion process. Before proceeding further, let us compliment Mr. Tunny on the straightforwardness of his explanations, and the courtesy of tone which distinguishes his observations. Where controversy is conducted in such a tone, divergence of view involves no rancour of feeling, and disputants may arrive at opposite conclusions without loss of mutual respect. This is satisfactory; and whilst, without in any degree contravening the statement of facts so lucidly given by Mr. Tunny, we must differ from him somewhat in the estimate of the bearing of these facts, we shall do so frankly, without risk, we feel sure, of being misunderstood, or of evoking any bitterness or hostility.

A word of explanation is due at the outset. Mr. Tunny thinks we were not correct in stating that at the recent Edinburgh meeting Mr. Archer's claims had been more sweepingly disputed than had been done on any former occasion, and reminds us that in the *Photographic Notes* in 1857, and on various other occasions, he had disputed these claims. We were familiar with the old controversies,* in which, from time to time, Mr. Archer's claims had been doubted or disputed, but our conviction was that the final issue on each occasion was a conclusion that Le Gray was entitled to just the amount of credit which Archer had awarded him in his first pamphlet, that of being the first person to suggest the use of collodion in photography. The exact amount of suggestion, which appeared to be the chief thing in discussion, was difficult to define, and each reader of the records would necessarily form his own conclusions, the general conviction being, we believe, that Mr. Archer was to all practical intents the inventor and introducer of what is known as the collodion process. In his letter of upwards of twelve years ago, Mr. Tunny describes Le Gray's account of his operations as "meagre and ambiguous." and as containing "suggestions for the collodion process." In his recent Edinburgh address, Mr. Tunny describes it as the "beautiful collodion process first given to the world by M. Le Gray," and adds, "My first collodion was made from Le Gray's formula." We do not quote these apparently contradictory passages for the purpose of charging inconsistency in Mr. Tunny, but merely to explain our statement that Archer's claims had been "more sweepingly disputed" than on former occasions. As we had never met with anything which could be called a formula for collodion by Le Gray at a date anterior to the announcement of Archer's process, we were naturally somewhat surprised, and asked for the data upon which the statement rested.

Let us now very briefly refer to the facts. We before stated, and Mr. Tunny has endorsed our view, that the question can only be satisfactorily decided by documentary evidence. He has given a succinct and clear record of the facts, based chiefly upon accessible documentary evidence: we shall accept the facts as stated, with very brief addition, and from them endeavour to show the essential difference which exists between the claims of Archer and Le Gray, and why we accredit the latter merely with suggestion, and the former with the invention and practical introduction of a process.

In June 1850 M. Le Gray published in Paris a pamphlet entitled, "A Practical Treatise on Photography upon Glass and Paper," and an English translation by Mr. Thomas Cousins was issued in London by Messrs. T. and R. Willats, within—according to the evidence given by Mr. Tunny—six weeks or two months. This pamphlet contains, we believe, the first published allusion to collodion for use in photography, and it is here that Le Gray's suggestion is made. Its use as a *substitute* for paper is not mentioned in the body of the pamphlet at all, the suggestion being contained in an appendix of about a dozen lines, in which collodion is classed with albumen, dextrine, and the mucilage of a fucus or sea-weed. We here give the appendix complete:—

"Appendix.

"I have just discovered a process upon glass by hydrofluoric ether, the fluoride of potassium and soda dissolved in alcohol 40°, mixed with sulphuric ether, and afterwards saturated with collodion. I afterwards react with aceto-nitrate of silver, and thus obtain proofs in the camera in five seconds in shade. I develop the image by a very weak solution of sulphate of iron, and fix with hyposulphite of soda. I hope by this process to arrive at great rapidity. Ammonia and bromide of potassium give great varieties of promptitude. As soon as my experiments are complete I will publish the result in an appendix. This application upon glass is very easy. The same agents employed with albumen and dextrine give also excellent results, and very quick.

"I have also experimented with a mucilage produced by a fucus, a kind of sea-weed, which promises future success. I hope by some of these means to succeed in taking portraits in three or four seconds."

This is the only approach to a formula given by Le Gray. Now let us look at Mr. Archer's first announcement, and see if it is not a little more precise than the allusion quoted. This appeared in the *Chemist*,* and is dated February 18th, 1851. After speaking of the disadvantages of the paper process and the albumen process for producing negatives, Mr Archer proceeds to say:—

"I find, from numerous trials, that *collodion*, when well prepared, is admirably adapted for photographic purposes as a substitute for paper. It presents a perfectly transparent and even surface when poured on glass, and, being in some measure tough and elastic, will, when damp, bear handling in several stages of the process.

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* Those interested in the matter will find the subject chiefly discussed in *Notes and Queries* in 1853, *Photographic Journal* 1857, and *Photographic Notes* 1857.

* We quote at second-hand, not having an original copy of the *Chemist* in our possession.

"I will now give a short outline of my mode of using it. The first step in the process is to prepare the solution of collodion. There are several ways of doing this, but I will briefly allude to two.

"Pour a quantity (say 1 oz.) of collodion into a bottle containing dry iodide of silver, to settle. The collodion will, in this way, take up a certain quantity of the silver salt, and become opaque; it should then be transferred to another bottle containing iodide of potassium; to be again well shaken up until the iodide of silver is entirely dissolved, and the solution becomes perfectly transparent.

"Or this:—To a solution of iodide of potassium in spirits of wine add a small quantity of iodide of silver sufficient to saturate the iodide of potassium; let, however, the latter salt be in excess. Add a small quantity of this solution to the collodion (between five and ten grs. by measure to 1 oz. of collodion will be sufficient), and if any of the iodide of silver should precipitate, a small quantity of iodide of potassium must be added to dissolve it. In this way, or by the former mode, the collodion may be prepared.

"The next step is to spread this solution evenly on a plate of glass. This can be done by pouring a sufficient quantity on the glass to run in a body freely. When it has entirely covered the glass plate, let the superabundance be drained off at one corner into the bottle again; this operation cannot be done too quickly, for the ether rapidly evaporating would prevent the collodion running evenly over the surface of the plate, and from its becoming too thick.

"The plate is now plunged into a bath of nitrate of silver, allowed to remain there for a few seconds, and then washed in water. (This washing is intended to remove all the ether from the surface of the collodion, which, if allowed to remain, would cause an unevenness in the sensitiveness of the surface, producing streaks or spots.) Immediately after washing, it may be exposed to the action of light for the time necessary to obtain a picture. This picture can be developed either by gallic or pyro-gallic acid. If the latter acid be used, a few precautions are necessary, to which I will allude presently. The former acid may be used as a bath, in the ordinary way. After the picture is developed, the film of collodion should be loosened from the edges of the glass plate with a flat glass rod. By doing this, it will easily separate from the plate, and can be allowed to float freely in the water bath, previous to being placed in the bath of hyposulphite of soda, and then again thoroughly washed.

"The drawing can now be mounted on a plate of glass, and when dry can be varnished, to protect it from injury.

"If thought more convenient (and, in fact, this mode is the best when pyro-gallic acid is used), the film of collodion, after being exposed to light and the image developed, can be removed from the glass plate (leaving the fixing and final washing to be done at leisure) by rolling it up on a glass rod, thus:—Take a sheet of ordinary white wrapping or thick blotting-paper (if glazed it will be better), about the same breadth, and about one-third longer than the drawing to be removed, soak it in water, and place it with the glazed side in contact with the surface of collodion. Turn the end of the collodion picture over the edge of the paper lying upon it, then place the glass rod just within the edge, and commence rolling it upon the rod; with a little dexterity, this can be accomplished without injuring the drawing. The cylinder thus formed is easily removed from the glass rod, and can be preserved for any length of time in this state by being kept damp and away from the light, to be finally fixed at some more convenient time. Thus one plate of glass will be sufficient to make any number of drawings upon, the above operations being repeated for each picture.

"The plate of glass should be rather larger than the drawings intended to be made upon it, to allow for rough edges, &c. The back of the glass may be ground, to get the focus upon, and one side should be formed into a kind of handle, to prevent the hand of the operator being near the solution when the glass is in use.

"Thirty grains of nitrate of silver to one ounce of water will be sufficient for the nitrate of silver bath.

"Three grains of pyrogallic acid to one ounce of water, to which must be added about one drachm of acetic acid.

"Between five and tens grains of nitrate of silver to one ounce of water.

"The two latter solutions are to be mixed in equal proportions when a picture is to be developed. A wide-mouthed glass measure will be necessary to hold this mixture."

Mr. Tunny thinks that Mr. Archer "had not arrived at a formula a whit more definite than Le Gray's." Let us, then, compare the instructions as given by each, in order to judge how far they present instructions by which pictures could be produced. Let us first examine Le Gray's statement. He says he works on glass with "hydrochloric ether, the fluoride of potassium and soda dissolved in alcohol 40°, mixed with sulphuric ether, and afterwards saturated with collodion." Here there are no proportions of any kind except that indicated by "saturation," and as saturating an ether and alcohol with collodion, in any sense in which we can understand it, must mean adding soluble cotton, it would produce a thick jelly, it is quite certain that instruction for the use of such a proportion is worse than useless. A plate of glass coated in some way with this gelatinous mixture is next treated with nitrate of silver. It is not stated whether the film is to be employed dry or wet; but as in all the processes in use up to that time a dried surface was submitted to the silver solution, it is presumable that, as in the case of albumen, this gelatinous coating was desiccated before reacting on it with the silver solution, certainly would be so understood. It is not stated what strength the aceto-nitrate solution was to be employed, nor what proportion of acetic acid; nor is it stated whether, as in the albumen process, the film is to be washed and exposed moist, or washed and dried; but the fair presumption is, that similar treatment to that employed with albumen would be intended. The haloid salt described is a fluoride, and fluoride of silver would be formed; but as this—unlike the iodide, bromide, and chloride—is soluble in aqueous solutions, it would be partially, if not entirely, dissolved out of the film as quickly as it was formed, so that very little of the sensitive salt would remain on the plate when it was exposed to the light. We have, we think, dealt with this "formula" fairly, and without unnecessary cavilling. After thus examining it, let us ask, will any of our readers undertake to produce a negative by it, following out as honestly as possible the instructions?

Let us now examine Archer's instructions. Neither he nor Le Gray give any details of the collodion itself, but this amounts to little; it was a preparation in use in surgery, and we may presume that a pharmaceutical chemist's collodion was intended. In this collodion iodide of potassium, containing iodide of silver, was to be dissolved. Here, as in Le Gray's case, the proportions are indefinitely stated, "saturation" being the most definite idea employed; but there is this difference, that iodide of potassium being sparingly, although sufficiently, soluble in alcohol and ether, there was little danger of excess, whilst saturating ether and alcohol with collodion, so far as we can understand the idea, must produce a jelly, which could not be used at all. Then Archer's instructions are specific that the plate has to be plunged into a bath of nitrate of silver as it is coated, without waiting to dry. The strength of the nitrate bath is definitely stated as thirty grains to the ounce, the common strength used to this day. The strength of the developer is definitely stated as a grain and a-half of pyrogallic acid and thirty minims of acetic acid, with from two and a-half to five grains of nitrate of silver in one ounce of water, a developer frequently used to this day when pyrogallic is employed. We submit that, for the first statement of a new process, involving essentially new modes of working, this was not a very indefinite statement, and that any photographer of intelligence might without much difficulty produce a negative by it now, by following accurately the instructions given.

So far, then, as the first publication is concerned, it will, we think, readily be granted that whilst Le Gray's was a suggestion of the vaguest kind, from following out which little could be expected, Archer's was really a formula, precise, at least in some of its details, and sufficiently clear to enable the experimentalist to produce negatives.

There are two or three other considerations, however, yet to be mentioned. Mr. Tunny intimates that although the appendix of Le Gray is meagre, the difficulty of working it would be reduced in proportion as the operator was familiar with the use of plain, iodized, and collodionized papers. But surely M. Le Gray was so familiar, and yet, so far as we have any evidence, he made no progress with the working of collodion, for it was not until a year and a-half after Mr. Archer's publication that Le Gray gave further particulars, notwithstanding that in his appendix of 1850 he had promised to publish further details as soon as his experiments were complete.

Mr. Tunny points out that in the pamphlet of 1850 Le

Gray gives a formula for using collodion with paper, employing iodide and bromide of potassium in the "nearest possible proportion to what is used at the present hour for sensitizing collodion." A further reference will satisfy Mr. Tunny that this is an error. The formula given stands thus:—Take 365 grammes of [a dilute solution of isinglass] and add to it as under:—

Iodide of potassium	13 grammes
Bromide of potassium... ...	4 ,,
Chloride of sodium	2 ,,

A brief calculation will show that this proportion of salts is about five times as large as that used in collodion at the present hour. M. Le Gray says, spirits of wine may be used, saturating it with collodion, instead of water, and that the salts will dissolve easily. We fear very much that any one attempting to dissolve the salts in question, in the proportion given, in spirits of wine or collodion, will find the task impossible.

There is another important fact in connection with the subject. Le Gray's suggestion was so far from being a formulated process, that it excited scarcely any attention in his own country, where the collodion process did not come into operation for years. Mr. Cousius, the translator of the 1850 pamphlet, states in the preface that he was resident in Paris, in communication with Le Gray, and had the opportunity of "inspecting his apparatus, following the process [that is, of photography on glass and paper], and examining some hundreds of specimens;" yet he makes no mention whatever in the preface of the collodion process, which he would surely have done had either he or M. Le Gray thought the matter of importance. Whilst the suggestion of M. Le Gray was so meagre and indefinite as to be barren of results, that of Mr. Archer was so germinal as to create a host of workers the moment it was published, and to proceed to take root as henceforward *the* process of photography.

The position of Mr. Tunny, happily, in this matter does not come under doubt or discussion. We see no reason why he might not seize on the meagre suggestion of Le Gray, with eager skill proceed to work, and, by an exhaustive process, eliminate the errors and uncertainties of Le Gray's brief paragraph, and eventually so arrive at something practical. There is no reason why, as an experienced and enthusiastic photographer, he might not arrive at a process *per saltum*, and, by a leap of genius, solve the difficulties in which the process as suggested by Le Gray was involved. Unfortunately, whichever series of facts occurred—and a statement of either would, as we have before said, be full of interest—they were not published; and whilst we, and those who know Mr. Tunny, cannot doubt his account of his early operations, yet, being an *ex post facto* statement, it takes no place in history. An inexorable law makes histories of the kind rest on documentary evidence.

One word in conclusion. Mr. Tunny says, with noble candour, that notwithstanding the highest regard for Mr. Archer, when a question of truth arises, even between a countryman he loved and a foreigner he has never seen, he cannot allow his judgment to be warped or perverted. We entirely concur in his sentiments, and have in these pages before now had occasion to carry out the same principles. It is not because Le Gray was a Frenchman and Archer an Englishman that we defend the claims of the latter. *Amicus Plato, amicus Socrates, sed magis amica veritas.* The name of Le Gray we honour as that of one who did much valuable service to our art when it needed the aid of able men. We have pointed out the looseness of his suggested formulæ simply to show that it was merely suggestion, and not to discredit the benefactor to the art. We have defended the claims of Archer because we believe them to be based on truth, and because he is no longer here to vindicate his own claims. We have refrained from referring to personal testimony such as that of Dr. Diamond, who was associated with Mr. Archer in the discovery, and the chief practical agent in the matter, but who, with noble reticence, has never attempted even to share the honours of his friend, who conceived the initial idea. We have confined ourselves to legitimate deductions from documentary evidence, which, we think, cannot fairly be gainsaid.

Foreign Miscellanea.

M. Theodor Prumm relates, in the *Photographische Mittheilungen*, an interesting account of a visit to Albert's printing establishment at Munich. M. Prumm's opinion is, that a course of instruction and practice of four weeks would be barely sufficient to render a novice perfect in all the manipulations, and capable of turning out prints equal in quality to those produced by M. Albert himself. This statement is made not from any motive to depreeate the process, but in order to show that skill and practice play an important rôle in the Albert invention. In the printing room, about three or four men are employed, and the same number of girls As the prints are drawn from the presses—of which there are six—the number is carefully noted, and thus M. Prumm was enabled to verify the statement that several hundred prints may be obtained from every plate. The preparation of the plates is undertaken by M. Albert himself, who, besides actively superintending the whole of the printing arrangements, likewise carries on his duties as a portrait photographer at the same time.

A new work on *Photochromie* and *Lithochromie* has just been published by M. Gustav Meyer, of Frieburg, in Breisgau; the book treats of colouring photographs by painting them on the reverse side, and then rendering them transparent.

A novel, if not a very practical, method of manipulating negatives which are over-exposed in certain parts (as, for instance, the sky in a landscape, or a white robe in a portrait), was suggested at the last meeting of the Berlin Society by M. Meissner, of Bonn. He recommends the fixing of the plate immediately after development, and drying and varnishing it; he then applies, by means of a brush, a little gum, tinted with a colouring matter of some kind, to those portions which have been over-exposed, and thus the latter are protected, when subsequently the varnish is removed and the negative intensified in the usual manner. The negative must, of course, be finally re-varnished.

The French Photographic Society has resumed its sittings for the season, and held its first meeting on the 4th ult. Communications were received from MM. Marion, Albert, and Belbeze.

A German amateur, M. Dubost, of Dusseldorf, has been very successful with a coffee dry process. The collodion he prepares himself, according to the following formula:—

Alcohol at 36° C.	30 grammes
Iodide of ammonium... ...	½ gramme
Iodide of strontium	1 ,,
Iodide of cadmium	2½ grammes
Bromide of cadmium... ...	1 gramme.

The coffee solution is made by pouring 300 grammes of boiling water upon 30 grammes of ground and burnt coffee and 15 grammes of white sugar; the developer is prepared by dissolving 2 grammes of pyrogallic acid in 100 grammes of water, and adding thereto another solution, consisting of—

Water	100 parts
Nitrate of silver	6 grammes
Citric acid	6 ,,

Dr. Van Monckhoven will deliver his lecture on a new artificial light suitable for photography, in London, on the 14th inst., and in Paris early the following month.

M. Blanquart Evrard, a contemporary of Fox Talbot, has in the press a new work on "Photography: its History, Progress, and Changes." It will be illustrated by specimens of photo-lithography of MM. Garnier and Baldus, by Woodburytype, and by Edwards' carbon process.

M. Grasshoff strongly recommends Beyrich's lime toning bath, which may be kept ready for use for a considerable time. One hour before employment, six grammes of gold solution (one part chloride of gold, one hundred parts water) and a small quantity of lime, are added for every sheet of paper to be treated. The solution should be filtered every three or four days, and gives the best results after a few days' use. The formula is the following :—

Chloride of gold	1 gramme
Acetate of soda (re-crystallized) ...	10 grammes
Water	2000 „
Chloride of lime	¼ to ⅓ gramme

The so-called *Victoria glace*, a new albuminized paper, was highly spoken of by MM. Augerer and Fritz Luckardt at a recent meeting of the Vienna Society.

In the *Annales de Chimie et de Pharmacie* appears a simple method of obtaining pure bromine salts. In ordinary collodions the presence of a small quantity of iodine is of no import, but in a bromide of silver collodion process the bromine should always be pure. In the *Annales*, MM. Bobierre and Herbelin recommend dissolving the bromine salt to be purified in water, adding a little pure bromine, and then heating the same until the whole of the free iodine and superfluous bromine have evaporated.

M. C. Sternberg writes to the *Archiv* stating that, instead of employing a sulphocyanide and gold toning bath for collodion paper, he uses the same toning and fixing solutions as are necessary for albuminized paper, and finds the results much more satisfactory.

The *Photographische Notizen* is the title of a photographic journal published in Vienna. The number for the present month contains no feature of novelty.

Portraits *à la* Salomon are popular on the Rhine, at Cologne, Dusseldorf, Crefeld, &c.; but in no other part of Germany has the style been extensively patronized. The price of a portrait in this style, at the places above named, of extra plate size, with gold bead frame, is twelve thalers, or thirty-six shillings.

In dividing glass negatives, or in cutting any description of glass of which the character is unknown, the *Archiv* recommends, after scratching, to lay the plate on its back, and give it a few smart raps with the handle of the diamond at the beginning and end of the cut. This is a better method than breaking, especially when dealing with a brittle material, the result being much more certain.

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THE PHOTOGRAPHIC EXHIBITION.

We have already observed that examples of combination printing are more abundant at the exhibition in Conduit Street than we had seen it at any former exhibition. An original print of Mr. Rejlander's celebrated "Two Ways of Life," which most photographers have heard of, but which many until now had not seen, the number issued having been limited, was hung at this exhibition: a little yellow; but, on the whole, in very good condition for a print of upwards of twelve years old. The attempt to produce an allegorical picture by such a literal art as photography was a very bold one, and if it failed in achieving complete success it was from no lack of art capacity, skill, and perseverance in combating the inevitable difficulties of the work. Pictorially, Mr. Rejlander achieved great success, and a degree of excellence in securing expression rarely achieved. But there were two causes which assisted to array a certain degree of hostility against it at the time when it was produced. It was the first serious attempt to introduce photography—which had been patted on the head and patronized as a handmaid of art—into the inner circle of the fine arts with claims of equality instead of vassalage, and this was felt to be an abuse, both by those who professed to regard art as a sacred mystery, not to be profanely attempted by a "mechanical process," and by those who, regarding it only as a curious science, asked what photographers wanted with pictures. The second cause operated with those who were not so narrow as either of the former classes. It was felt by these that allegory belonged to the region of poetry, and that the syren who represented pleasure in works of imagination could not be rendered by the presentment of semi-nude women, pictured with all the realism and actuality of nature itself. Mr. Rejlander's great work, however, taught an important lesson. It showed what was possible in this difficult branch of the art, and suggested what was to be avoided. It has since produced fruits of which Mr. Rejlander may be proud, and to him for this, and much more, a large share of the credit of this work, and the gratitude of photographers who believe in the pictorial capacities of their art, is due.

We have before spoken in detail of the works of Messrs. Robinson and Cherrill, "Over the Sea" and combined landscapes, and need not refer to them further here. One of the most perfect pictures in the exhibition, the "Stolen Moments" of Mr. Hubbard, is a fine example of the possibilities of combination printing. The size of the picture is about fifteen by ten inches, and it is wisely framed close up with a gold moulding, and flat, without any white margin. It was produced from four negatives. We get rid of mechanical details first. The scene is an interior. The figure which gives the picture its name is a young girl, who, for a time, shirks her household duty of the moment, of plying the broom, which rests idle by her side. She leans against a wall and reads a letter, the envelope of which has fallen at her feet. In an inner room, through an open door, is seen an elder woman nursing a child, the cradle standing near. The subject is simple enough; but the treatment makes the picture. The composition is fine, the chiaroscuro charming, and the rendering of the sentiment most admirable. It combines the homely pathos of Faed with the finish of Meissonier. It excels most in the quality for which photography should be pre-eminently well suited, but in which it most frequently, in inartistic hands, fails—the exquisite rendering of light and shadow. The girl's figure is lighted from a small window, through which a glimpse of the distant street is seen, and a delicate cast shadow of the girl is seen on the wall against which she leans. In the varied degrees of obscurity in the room, which have so much pictorial value, the deepest shadows are all transparent, rendering the sense of space most perfectly. The picture was not completed until the day before it was sent into the exhibition, and was the first completed copy from the negatives, and some easily remedied errors, depending on the depth of printing, might be discovered in the print; but, as a whole, it is a most charming and creditable example of the power of photography, in an artist's hands, to give pictorial embodiment to a thought.

Mr. Slingsby, of Lincoln, contributes two pictures, each printed from more than one negative. "Early Summer" is a very charming landscape with figures, possessing many excellent qualities; but Mr. Slingsby can do better work. In all technical photographic qualities the picture is perfect, and in many art qualities also; but the composition is a little scattered, destroying the sense of unity. "The Milkmaid," another rural subject picture by Mr. Slingsby, just misses being an exceedingly good picture, and we have no doubt that a second print from the same negatives will be excellent. The chief fault here is that the middle distance is too vigorously made out, and almost projects further forward than the foreground and figure. The thatched roof and the trees behind the figure may be easily thrown back by management in printing, and the picture will gain immensely by the change. Mr. Slingsby has so much real artistic taste and skill, that we are satisfied he will produce still finer pictures, and we welcome him a second year as amongst the most promising of the little army who are engaged in maintaining the art claims of photography.

Mr. Twyman exhibits a large combined picture, which, we regret, is not nearly equal to some of his pictorial efforts of former years. The subject is a cornfield with gleaners, which might have made a capital picture; but, unfortunately, the whole has a heavy, leaden, gloomy effect; and the technical defects destroy the glowing sense of autumn light and autumn colour which, even in monochrome, are required, and quite possible.

Amongst Mr. Earl's fine large landscapes are some produced by combination printing, the aim being, however, rather to meet the difficulties belonging to large size than to secure pictorial qualities not to be attained in a single negative. The work is well done, and the effect very satisfactory.

Besides the attempts at pictorial photography by means of several negatives, there are many *genre* subjects produced on one plate of considerable merit. Mr. Crawshay, amongst other excellent portrait studies, contributes a capital pair, entitled "In the Works" and "Out Walking." In one is a couple of girls in the costume in which they are engaged in the iron works making bricks, in which they present very essentially the appearance of daughters of toil. In the other they are in their holiday attire "out walking," in the attire and with the appearance of young ladies. Besides the fine studies of Mr. Rejlander, which we have already mentioned, and some character portraits to which we have also referred, Mr. Alfieri exhibits some good rural subjects of this kind. Mr. Ashdown has some good studies. Mr. Howard, Mr. Hewitt, Mr. Lloyd, Mr. White, Mr. Buxton, Mr. Downer, and others, have similar pictures, all more or less worthy of notice.

THE PICTURE AND THE PROCESS.

Precept.—Technical Instruction a Duty.
Practice.—"Stolen Moments," How Produced.

by W. T. BOVEY.

Part 1st.—PRECEPT.

The photographic press the most legitimate medium for conveying technical instruction.

If I mistake not, it is Mr. Rejlander who is responsible for the remark that he once lost his feeling for beauty when he was devoting his attention to the study of the marvellous and intricate details of those anatomical pullies which form the motive machinery that impart the power of action to the human frame. I would not, however, do my judgment violence by concluding that an intelligence so bright as Mr. Rejlander unquestionably possesses could have been blind to the beauties unfolded by the interesting branch of physiological science that he was intent on mastering. Yet, taking the passage I have quoted (from memory) in its literal sense, I am inclined to think that many photographers who visited the late exhibition might have adopted Mr. Rejlander's experience as their own, for in full truth, I fear that in many instances, whilst viewing the pictures most attractive, they lost sight of the surface beauties in their anxiety to get at the "pullies." Perhaps it was in anticipation of the difficulty here indicated that the suggestion was made which recommended the attachment of a bill of technical particulars to each picture exhibited; if so, the fact is most conclusive that however convenient such a scheme, if carried out, might have proved to such as desired knowledge intermingled and compressed, the managing committee have good reason to congratulate themselves on the good taste and better judgment they displayed in their final arrangements. Not that I for an instant wish it to be understood that I regard technical information as unnecessary; on the contrary, I am firmly of opinion that the producers of every picture possessing novelty and merit is bound, on grounds of reciprocity, to afford information and assistance to those among their photographic brethren who desire knowledge and require assistance.

"Freely as ye have received, freely give." To a practical adoption of this homily, photography, whether regarded as an art or science, owes its giant growth. From a full and active recognition of the sentiment those words I have quoted convey, photographers have derived the invaluable advantages which usually accompany honestly directed efforts of mutual instruction. I am, however, impressed with an idea that viewed in a photographic aspect the meritorious principle of mutual teaching is best applied when conveyed through its legitimate medium, viz., the press, which spreads the information far beyond the circle in which the instruction personally acts. I am but too well aware that the office of teacher is at all times free from the attractions of a sinecure. And I bear in lively remembrance at this moment an incident which occurred several months ago, when a gentleman was rewarded, for his efforts in giving gratuitous instruction, with a smart rap over the knuckles for over-communicativeness. I scarce need observe that the rebuke was as undeserved as the protesting arguments offered by the caviller were unseasonable and logically weak. Now had the teacher to whom I allude read his paper before a mixed audience, such as visited the late exhibition whilst it remained open, the protest against the divulgement of secret dodges would have been well timed, and, as such, entitled to a respectful consideration; but facts prove the contrary.

The paper on "combination printing" was read before a body of men who are actively engaged in photographic practice, and many, if not all present, at the meeting alluded to, had previously enjoyed opportunities of judging of the artistic merit and technical finish of the examples provided by the teacher as illustrations of the value of combining separate parts to form an attractive whole. Seeing, therefore, that every photographer wears the robe of his noviciate, extending even to the most advanced, a description of the ways and means employed in the production of each picture that passed in review, on the occasion of which I write, was not intended merely to gratify curiosity, but, in addition to the good the lesson probably achieved among the immediate hearers, the press took active note, and soon after sent the essay abroad, to teach the world what can be done by photography, and how to do it.

The "outer world" looks for and needs pictures only. Let them have pictures, in the fullest sense of the word, to look at. On the other hand, men who follow up, conscientiously, photography as a profession—*they* desire to see pictures, but need showing how such pictures are made. I say, give such enquiring ones ample opportunities of seeing pictures, and, in due time and suitable place, show the strivers after excellence the means by which excellence has been by others achieved. A lad would scarcely learn the way to construct a piece of furniture if his apprenticeship was passed in viewing only the finished specimens of cabinet art; nor would an artist in embryo learn much of the art of creating a picture by spending his noviciate in looking on completed works, be the varnish never so bright. Certainly the eyes of genius can penetrate through hidden worlds, but it must be admitted that, as a rule, mediocrity needs teaching. Photography ranks among its followers none but learners; these have, from the commencement, most wisely worked on the see-saw principle: the up one assisting in imparting information to the down, until the down one not unfrequently moves uppermost; and so I sincerely hope the game of mutual instruction will long continue, for it is an adherence to those principles which give to progress wings supplied by many minds, thus affording a realization of the proverb, that in unity there is strength.

In concluding this chapter, I need only add that I trust I have produced argument sufficient to show that, in its proper time and place, technical instruction should be given to photographers who desire such teachings; not merely as a duty the stronger owe to their weaker brethren, but also as a stroke of good policy, which reflects mutual advantages in its results, for I ardently believe that the good we achieve in this world will sooner or later recoil to the donor's profit.

Referring more especially to photography, I have found, as a rule, that your secret-monger is to the full a secret-seeking mongrel; without enough of brains to devise, he sucks the brains of others, and hugs the booty as his own begotten. Secrets are not necessary. They may be likened unto seeds that lie hidden in a cupboard, as they rarely germinate; more seldom do they reach perfection. The world was made for all. All were intended to be co-workers. United we advance; isolate ourselves, and the world runs away from us. Our duties and policy are to work heartily together, pull heartily together, to help each other with instruction widely diffused, and the end will be that photography must conquer.

GLASS HOUSES AND LIGHTING.

BY ENNEL.*

Mr. Beattie's observation at the close of our last meeting—viz., *that a thorough knowledge of lighting and of glass houses was a desideratum for photographers*—induced me to promise a paper on the subject. I thought at the moment I had plenty of time before me for preparation; but illness, moving, and other circumstances intervening entirely prevented me from devoting particular attention to the subject, so as to do it that justice which it so richly deserves. But, on the other hand, I cannot say I am wholly unprepared, seeing that I have necessarily meditated on this matter for years, daily, hourly, sitting in the house, walking by the way, lying down, and rising up. I beg, then, to offer some few of my own observations with the view of eliciting your practical remarks in return, the main object, indeed, of our meeting together.

I must premise that I confine myself to lighting for portraiture.

The principle we all start from, very simple indeed, is this: that the sitter shall present a pleasing picture, by dint of a due distribution of light and shade, *i. e.*, not all light, nor all shade, nor light and shadow, but light and shade so blended that neither may be defined by lines of demarcation, but that they shall gradually merge into one another; that, in short, the image shall stand out stereoscopically. The technical term "modelling" is very appropriate.

Then, again, as to the direction of the light. When the source of light is contained in the picture, it finds a legitimate place anywhere. Fine effects may be and have been produced by placing the light, say, below, as, *e. g.*, when carrying a burning candle. Without such visible source, the direction of light most pleasing is from above, at 45°.

These simple conditions every one subscribes to; yet see how, in the majority of cases, they are fulfilled. In the first place, many—yea, a great many—cannot distinguish between shade and shadow. Secondly, they do not really know how to set about producing desired effects. We see them grope in the dark, now catching hold of one opinion, now grasping another, then abandoning this for a third, and so on, *ad infinitum*. It is with lighting as with curing smoky chimnies. Innumerable "infallible" cures are promulgated, such as laying the poker slanting against the top bar, &c. But the smoke does not mind that; it puffs out under the very nose of the doctor. Strange to say, the doctor, nevertheless, believes in his cure; stranger still, he finds followers. Ask him on what principle he would explain his method, he will only pooh-pooh you; he knows not the laws which govern the movements of air. So likewise we read and hear a great deal in respect of lighting.

A photographer desires to produce the same effect as his friend Y. On seeing Y's glass house he thinks he cannot do any better than pull down his own, and adopt another after his friend's model in every particular: curtains, blinds, dimensions, &c. And, lo! when all is finished, he arrives at no other result than before. Why? His locality is different, *and* he has not Y's head on his shoulders. Yes, that is the secret. I am not going to forget myself, and lay down here rules for lighting, except these two: observe; and, secondly, observe.

You will naturally expect me to speak now of the glass house. We will enter that necessary evil by-and-bye. In the meantime we will roam about awhile in the open air by way of compensation for the social excursion we have *not* had this year.

I have always maintained that open air portraits are the best, provided we observe certain rules and regulations, or, rather, principles. *Under* a tree, in front of a suitable background, the light less on one side than on the other; not outside a door or a window, unless there be a balcony or something else to intercept top light; rather *within* the door way, receding from the open window.

I said I have gained much information in "walking by the way." Pray go and do likewise. Notice the faces of people you meet in the street; *on one side of the road or on the other*, see how the shaded side of the model is affected by the reflecting houses; note also many defects, defects which might easily be overcome by judicious arrangement, were we called upon to photograph on the spot. I have no doubt you will then agree with me that splendid effects can be produced out of doors. Still we are obliged to have recourse to the necessary evil, the glass house. But let us, at least, take with us the information we have gained out of it. We will, however, delay going in as long as we can. Let us first pitch in a field, a tent, or a square framework open to the north. Let there be curtains suspended from the front edge of the roof, so as to shade off light at pleasure. Behold, the most perfect operating room! But now, wind, rain, and cold bid us go under shelter, and we enter the glass house accordingly, or, which is the same thing, we close in the open space with glass. And here we at once find or create enemies. Though the glass house be a close imitation of the most perfect operating room just named, it is ever encrusted with dust and soot, is cold in the winter, unbearable in the summer. Again, we fancy we have too much light, and begin patching here and there. Countless blinds, curtains innumerable, are the order of the day. And when the light is at last permanently shut out at one side of the sitter, recourse is had to reflectors—reflectors, too, that stand upright—which only serve to throw light between the sitter and the background. Then we begin to suspect that the construction of the glass house is at fault, and the roof is heightened according to some, or lowered according to others, or the roof is slanted in the gable fashion, or sloped down front ways by mathematical calculations, under this or that angle, as if light cared one jot about that. It enters through the dusky medium anyhow. The fact is, as regards the amount and quality of light, it is perfectly immaterial whether we have a flat roof, a ridge roof, or a lean-to; whether the roof is high or low, and under whatever angle within certain limits.

As regards high and low, I must be a little more particular. My friend Dr. Vogel, some time ago, made very elaborate calculations and mathematical diagrams to prove that the farther away the roof the less light reaches the sitter. Well, he proved a truism. We did not want him to tell us that. But what we did want him to do is, not to leave the side light out of calculations. His truism applies only to a sky light over opaque walls, or to a window in the room, but not to a house which is all window.

Again, with regard to stippling, plastering, or blue light. They are well intended, but mistakes withal. Sometimes occasions arise—as, *e. g.*, when a glass house is closely hemmed in between chimnies and walls—that the little available light is thought to be improved by having it diffused. But we must not forget that the light is at the same time diminished. There are many who think ground glass does not diminish light. Let them put upon sensitized paper a piece of such glass partially rendered transparent by grease or paraffin, and they will soon think differently. See how black the snow cloud is! Not because it undergoes a patent carbon process, but because the transparent drops of water have become frosted. We want light, and plenty of it, short of direct sunlight, and the less we meddle with the already dusky glass the better. There are several kinds of glass in the market which diffuse without diminishing light, such as polished, fluted, and others; these, when of good colour, may be used with impunity.

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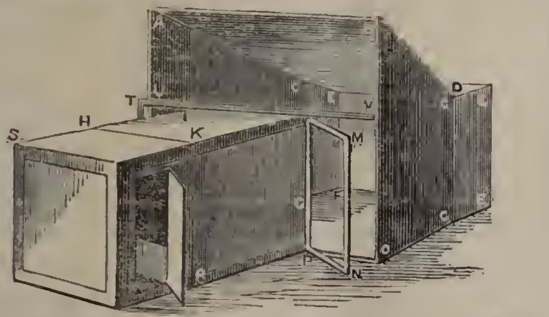
* Read before the Photographic Society.

And now let us go back to the operating room described before. Now is it not perfect? What more do we want? Top light is cut off, the suspended curtain supplies all the shading wherever required, the sides of the sitter are in shade, and his head is not lighted up so as to represent a barber's block, with white hair on one side and dark hair on the other. His coat, too, shows the same tint on both sides, yet all the folds are rounded off like the face by simply drawing the curtain in front, more or less, or simply placing the sitter out of the centre; *i.e.*, nearer one side than the other, or both.

"But oh, the front light!" you will all cry. I know very well that the majority, if not all, photographers have set their faces against front light, only not in the proper—*i.e.* the literal—sense. Why? Ask Messrs. "Ipse Dixit & Co." I know not the reason. *Prima facie*, I should say front light ought to be predominant, seeing that we have to copy the *front* of the model, or that portion which fronts the lens. I say predominant, for we want front, top, and side lights also to help make up the modelling. Again I say, go into the highway and byways, and see if it be not so.

But though I have advocated the close imitation of that often-mentioned operating room, yet, were I to build a glass house *de novo*, I would certainly deviate from it in some important particulars. I want a glass house which shall be perfectly water-tight, warm in winter, cool in summer, in which neither morning nor evening sun shall annoy; which shall have plenty of light, and that light most easily managed; and which shall be easily ventilated, and on the glass of which dust shall not accumulate more than on common windows, nor be removable with greater difficulty. Here is the model. It shows, at a glance, what many diagrams would fail to do.



A F, glass house; A B U V, swing window; L M P N, and T, French windows; H I L K, tunnel; S R, dark room.

The whole may be solid masonry, wood, iron, or what not. The *source* of light is entirely from the front, and the top front light and the side lights are amply supplied by reflection from the roof and sides sloping respectively upward and outward. The angle here adopted may not be the best—possibly 40° or 45° might be better, which must be proved by experiment—but this model is only to serve as an illustration of the idea.

The scale is half an inch to a foot, so that we have a space for the sitter, E E′, twelve feet wide; E F, eight feet high; G F, five feet deep. The floor from this rectangular space (from the line G G′) to the tunnel measures twelve feet in length; and transversely, at the north end, along the front of the tunnel—viz., from O to the opposite corner, like the parallel line A B—eighteen feet. The light of the walls at the north end, B O, is fourteen feet. The dimensions of the tunnel are: K L, ten feet; I L, eight feet; L P, eight feet; so that an area of direct light—viz., above and on the sides of the tunnel—one hundred and eighty-eight square feet (or, after all deductions, say one hundred and eighty feet) remain available; but this amount may be increased by reducing the dimensions of the tunnel in width and height, or by enlarging the angles of the sloping planes, or both. The top window, A B U V, is to swing like a toilet glass (for ventilation), and to be backed by a curtain nine feet wide, moveable by two balancing-weights, as are also the two glass doors or French windows, L M P N and T, to regulate the shading.

Now fancy a room with a window eight feet by ten, facing the north, and a model opposite it at the distance of thirteen or fourteen feet. The lighting is splendid. But now add the sloping walls and ceiling, with their reflecting surfaces. Can you imagine a softer light? Perhaps not. Nor could I until I saw a similar mode of lighting in Messrs. Schaffer and Buddenberg's steam gauge manufactory at Buchau, near Magdeburg. The workshop may be described as an immense hollow cube lighted from above, not by flat or slanting skylights, but by reflected light only. The section of the roof presents the shape of a saw, the vertical lines of which represent the windows, and the other lines, at 45°, the roof, painted white within.

Looking, as I did, at the effect in regard to quantity and quality of the light with the eye of a photographer, I found it almost magical; and I firmly believe that, for photographic purposes, my modification and simplification of the plan, as exemplified by the model, will answer well.

Correspondence.

THE ORIGIN OF THE COLLODION PROCESS.

Sir,—Under the above heading in the News of the 19th ult. there is a long, and, I must say, a very candid, review, from the reviewer's stand-point, of that portion of my address to the members of the Edinburgh Photographic Society, on the 3rd inst., relating to the early history of the collodion process.

The writer asks the question: "Did Mr. Archer discover and introduce the collodion process?" and then adds, "Mr. Tunny has more sweepingly disputed the right of Mr. Archer to such a position than has been done on any former occasion."

I think this is hardly correct, for I have not only written a defence of Le Gray as being the first to introduce the collodion process, but I have more than a thousand times proclaimed the fact, both publicly and in private. By turning to the *Photographic Notes* of March 1st, 1857, upwards of twelve years ago, you will find that I claimed then for Le Gray all that I asserted in his favour for this distinction in my late address.

My letter was called forth in consequence of a correspondent in a previous number of the *Notes* asserting that I had wrought with collodion three months before Mr. Archer. In that letter I said: "Now it does not seem to me to be a necessary corollary that because I poured collodion containing certain salts upon a glass plate which became sensitive to light, three months before Mr. Archer (which, however, is perfectly true), that therefore I should be entitled to the honour of being the first who made that most important discovery. No; the honour is due to another, one who has rendered many former services to the photographic art. In 1850 I was fortunate enough to come into possession of Mr. Thomas Cousin's translation of Gustave Le Gray's 'Treatise on Photography upon Paper and Glass.' That book contained an announcement that Le Gray had been successful in discovering a process by which he could obtain pictures in the shade in five seconds. The description of the process was somewhat meagre and ambiguous, but still, to that alone am I indebted for the first suggestions of the collodion process, which, with a dogged perseverance in experimenting with the various ingredients enumerated, I was successful in reducing to something like certainty. This method I have followed, with little variation, since that time."

To substantiate the accuracy of the above statement, I supported my views by appending a verbatim extract from Le Gray's treatise of 1850, and which is still in my possession.

In October 1855 the question was asked in *Notes and Queries* for the second time, "Who was the originator of the collodion process?" This is answered in *Notes and Queries* for December 1855, that it was discovered by Le Gray in 1849. In answer to this Mr. Archer [illegible] *Notes and Queries* [illegible]:—"I have Le Gray's work published in Paris in July 1850, in which he certainly mentions collodion, amongst a variety of other materials, as an [illegible] vehicle. He shows what solubility it is [illegible] the property of other materials, but he gives not one word concerning the manner of using it. He does not give the requisite proportions nor does he allude to its sensitising [illegible] glass."

How could Mr. Archer commit such an error in the above extract, when I quote the following from page [illegible] of Le Gray's treatise, first published in 1850 and then repeated in the edition of 1850? After describing the preparation of albumen paper, he says:—"I obtain also a good paper by using [illegible] of water in the same proportion of weight, and saturated with iodide instead of albumen. [illegible] the paper takes a [illegible] by one-third and gives, I think, a superior [illegible] obtained by the albumen process." Iodide of potassium, bromide of potassium [illegible] the sensitising bath to be used, and [illegible] in the proportion of [illegible] grains of the [illegible] is used [illegible] the process for sensitising collodion. So how could Mr. Archer say there were no directions or proportions given? Le Gray's application of collodion to glass is given in the same treatise of 1850, page [illegible], it is as follows:—

"I have just discovered a process upon glass by hydrofluoric ether, the fluoride of potassium, and soda dissolved in alcohol [illegible] with [illegible] water and afterwards [illegible] collodion with [illegible]. I afterwards wash with [illegible] nitrate of silver, and [illegible]. I hope by this process to arrive at great rapidity. Ammonia and fluoride of potassium give great facilities [illegible]; as soon as my experiments are complete I will publish the result in an appendix. [illegible] upon glass is very rare. The image [illegible] with sulphate and [illegible] gives also excellent results, and very quick."

Again I ask, how could Frederick Scott Archer commit such an error, and assert that Le Gray gave no directions for the application of collodion to glass after the above quotation?

In *Notes and Queries* of January 9th, 1858, a correspondent [illegible] in this controversy, in order to show the English readers the claim of Le Gray in contradistinction to that of Archer, quotes from Le Gray's last published work as follows:—

"I was the first to apply collodion to photography. My first experiments were made in 1849. I used this substance [illegible] photographic [illegible]. I employed for the purpose a solution of iodide of potassium in alcohol of 40°, saturated with collodion.

"In continuing these studies I was induced to apply this body upon glass [illegible], and I was soon in possession of an extremely rapid proceeding, which I [illegible] in the pamphlet that I published in 1850, and which was translated into English at the same time.

"I had already [illegible] the proto-sulphate of iron for developing the image [illegible] and the [illegible] of [illegible] by [illegible].

"The principle [illegible] generally [illegible] but [illegible].

"I believe that I have a right to claim [illegible] the invention of this [illegible] and of having [illegible] the [illegible] method that has been [illegible] to the present time.

"From the publication of my process till my return from the voyage that I had made [illegible], I was little occupied in [illegible] the dry paper [illegible]. This [illegible] that [illegible] heard [illegible].

"Nevertheless I have made my discovery completely public, and if I had [illegible] it with [illegible] it has only been [illegible] simply [illegible] upon other works, of which the public has still profited. It is, then, with more [illegible] that [illegible] take from me the merit of my invention."

In answer to the above translation of Le Gray's claims Mr. Archer writes in *Notes and Queries* of 23rd January, 1858, admitting the correctness of the translation, and that he [illegible] all the assertions made in his former letter; admits, also, that Le Gray suggested collodion, but gave no directions for its application to glass. In the same number Dr. Diamond (I take the signature H. W. D. to be the Doctor's) has a letter; it contains a statement that rather surprises me, in reference to the publication of Le Gray's pamphlet of 1850. In answer to the correspondent who gave the translation from Le Gray, the Doctor says:—

"Will he oblige by saying who published the pamphlet to which he has referred? I have heard the statement before, and have had every [illegible] to obtain a sight of the publication, but without success. [illegible] your correspondent, I would [illegible] Mr. Archer [illegible] of the merit which he claims."

What explanation can be given for Mr. Archer's statement in regard to Le Gray's publication of 1850? He had in his possession a copy of Willats's translation of Le Gray's treatise at the very time that Dr. Diamond was making every endeavour to see it. It was from this publication [illegible] he [illegible] Le Gray "the credit of first suggesting the use of collodion in photography," the [illegible] being published one year after his letter in the *Chemist*.

In *Notes and Queries* 30th January, 1858, Mr. W. Brown, who appears to have been a very intimate friend of Mr. Archer's, contributes his [illegible] to the discussion then going on, finding fault with H. J. for not quoting from Le Gray's edition of 1850, and says that "if it contained anything like an intelligible process, why is it altogether omitted from Le Gray's edition of 1851?" distinctly showing that he had never seen it. Strange, indeed, it seems, how Mr. Archer should so thoroughly have kept his two most intimate friends in the dark in regard to this publication. Mr. Brown gives a little history as far as he knows:—

"In September 1850 Dr. Diamond [illegible] Mr. Archer at his house and, for the first time, Mr. Archer produced some prepared collodion, a portion of which Dr. Diamond now has in his possession.

"Mr. Archer had then been trying it some three or four months. His [illegible] in March 1851 [illegible] published it in the *Chemist*. Let any of your readers [illegible] compare Mr. Archer's claim with Le Gray's [illegible] in 1851, [illegible] that he published it in 1850, and [illegible] his edition of 1851, leave out this [illegible]."

Mr. Brown's narration of the commencement of Mr. Archer's experiments with collodion brings us within a few days of the date of the publication of the English translation of Le Gray's treatise. A most singular coincidence!

In *Notes and Queries*, February 13th, 1858, Mr. Thomas D. [illegible] the friends of Mr. Archer with a verbatim extract from the work which they had striven so hard to obtain. At the end of the extract he concludes thus:—"I know not at what time of the year this pamphlet came out, nor whether the appendix was subsequently added; but my copy containing it was bought about the middle of *August, 1850*."

The publication of this extract by Mr. [illegible] seems to have at once silenced all controversy as to the priority of publication, as no one of the disputants ventures to [illegible] Mr. Archer's claim.

From the above [illegible] history of this controversy, it will be seen that my assertion was not the first declaration of Le Gray's right to priority of publication, as it will be seen that from the first [illegible] Mr. Archer and his friends put forth the claim of Mr. Archer it was publicly disputed.

In Willats's third edition of Le Gray's treatise, edited by Mr. Thomas [illegible], F.R.S., he devotes four pages to this discussion, and proof of the right to the priority of the publication of the collodion process to Le Gray; and since Mr. Archer [illegible] for his letter in *Notes and Queries*, the opportunity seems to have been lost to put forth M. Le Gray's claims by those who were acquainted with his works, and I have never met one who was acquainted with all the facts who was not convinced of the right of Le Gray.

Now, with regard to the practicability of working the process as published by Le Gray, I at once admit that the formula is meagre, and it required some little experimenting to formulate the process; but the difficulty would just be in proportion to the knowledge that the experimentor had of the various formulæ that had been formerly used in the working of the plain, iodized, and collodionized papers, and the other processes on glass at that time. The reader will see, by referring to the quotation of Le Gray's process, and the extract I give from Mr. Archer's letter to the *Chemist*, that they are both on a par as regards giving precise quantities. Mr. Archer says:—

> "Pour a quantity (say one ounce) of collodion into a bottle containing dry iodide of silver, to settle. The collodion will, in this way, take up a certain quantity of the silver salt, and become opaque; it should then be transferred to another bottle containing iodide of potassium, to be again well shaken up until the iodide of silver is entirely dissolved, and the solution becomes perfectly transparent.
>
> "Or this:—To a solution of iodide of potassium in spirits of wine add a small quantity of iodide of silver, sufficient to saturate the iodide of potassium; let, however, the latter salt be in excess. Add a small quantity of this solution to the collodion, (between five and ten grains, by measure, to one ounce of collodion will be sufficient), and if any of the iodide of silver should precipitate, a small quantity of the iodide of potassium must be added to dissolve it. In this way, or by the former mode, the collodion may be prepared.
>
> "The next step is to spread this solution evenly on a plate of glass. This can be done by pouring a sufficient quantity on the glass to run in a body freely. When it has entirely covered the glass plate, let the superabundance be drained off at one corner into the bottle again; this operation cannot be done too quickly, for the ether rapidly evaporating would prevent the collodion running evenly over the surface of the plate, and from its becoming too thick.
>
> "The plate is now plunged into a bath of nitrate of silver, allowed to remain there a few seconds, and then washed in water. (This washing is intended to wash all the ether from the surface of the collodion, which, if allowed to remain, would cause an unevenness in the sensitiveness of the surface, producing streaks or spots.) Immediately after washing it may be exposed to the action of light for the time necessary to obtain a picture. This picture can be developed either by gallic or pyrogallic acid."

It will be observed that neither the one nor the other gives the method of making collodion, or the strength of the solution to be employed; the quantity of the iodide of potassium and silver in the one, or the fluoride and bromide of potassium in the other; so that it will be seen that although Mr. Archer had seven months more time to experiment from the publication of Le Gray's book until the publication of his letter in the *Chemist*, he does not arrive at a formula a whit more definite than Le Gray's. This is strongly borne out by a passage in a letter in *Notes and Queries*, February 12th, 1853, in answer to a statement in a former letter by Mr. Archer, stating that he "had called several times and made me familiar with the process, by which he would lead persons to suppose that he taught me, in fact, to take pictures. Now I beg distinctly to say that this is incorrect. Mr. Archer made, it is true, several attempts in my glass room to take a picture, but totally failed. And why? Because he attempted to follow out the process as he himself had published it. From that time I worked it out by myself, assisted by hints from Mr. Fry."

In conclusion, I agree with the writer in the News, that this question can only be satisfactorily decided by documentary evidence, and I believe that in enforcing M. Le Gray's claim I have steadily kept this in view, and given a faithful record of all that has fallen under my observation. I had the very highest regard for Mr. Archer when he was with us, and I have even revered his memory since he passed away, but the consciousness of the facts could not thwart my judgment in favour of a countryman I loved and a foreigner I have never seen.

J. G. Tunny.

THE SOUTH LONDON PHOTOGRAPHIC SOCIETY.

Dear Sir,—May I be permitted to say a few words respecting certain statements and counter-statements which have appeared lately in connection with the South London Photographic Society?

In the first place, then, I wish to assert that the statements contained in your paper of October 22nd, signed by "A Member of the South London Committee," are substantially true, and can be *proved* to be so; and as the whole of the proceedings in connection with the resignation of the member alluded to in that statement, and the subsequent withdrawal of the permission given to the same person to report for another paper, went through my hands, I can vouch for the minute accuracy of the statements made by "A Member of the South London Committee."

And now, in the next place, a word about the question of general accuracy, which has been the moot point in the controversy; and I will only call attention to two assertions made in a reply to the letter in your paper. It is stated in the reply that the writer was secretary for *eight* years to the South London Society. From the official documents I find that it was for only *four* years. Again, it is stated that the subscription "demanded was for *two* or *three* years, *not more*." I *know* the demand was for *five* years.

The writer in question then makes a statement, from which it would appear that, when applied to for his arrears, he made a counter-claim for money expended by him for the Society, upon which the claim for arrears was relinquished. I beg to assert, and can vouch for the fact, that he neither had any claim on the Society for money, nor made any claim, and that his debt of arrears of subscription was not relinquished, but forgiven.

He also states that he did not receive presentation prints, and appeals to the last two secretaries in attestation of his statement. I for one am compelled to state that during the first year of my secretaryship he took the presentation print of the Society.

So much for *facts* as against mere assertion; and I may observe that there is another phase of this controversy which is so painful to see exhibited, and which misleads so many. I allude to the practice of throwing out "opinions" which are made to look like facts, but which are carefully kept from any possibility of being submitted to actual *proof*, and consequent admission to either the *true* or *false* side of facts.

To those who wish the *truth* to be paramount, and desire to practise the amenities of social life as becomes gentlemen, such statements and opinions which have been tested and proved to be *untrue* are most painful to bear with when they know that what is stated to the contrary is "untruthful," and also that the way in which such statements and opinions are promulgated is "uncourteous."—Yours faithfully, Edwin Cocking.

Hon. Sec., South London Photographic Society.

[We had declined the insertion of one or two letters confirming the statements of "A Member of the South London Committee," and offering evidence and comment, because we felt that enough space had been devoted to a personal subject. We feel bound, however, on behalf of the Society, to give insertion to the letter of the Secretary, his decision having been appealed to as one having authority. It will, of course, set the question at rest beyond further cavil.—Ed.]

COL. STUART WORTLEY'S PICTURES.

Sir,—I have just received a communication from Col. Wortley, stating that I was mistaken in my assertion that *all* the cloud negatives from which the pictures he exhibited were printed had passed through my hands, as only three out of the nine subjects exhibited were among the large parcels of negatives he sent me; also that all the prints exhibited by him were executed by himself. I regret the error I committed, which was, of course, altogether unintentional, and, I think I may venture to add, pardonable, as the negatives I *did* receive were all so like in form and beauty. The mistake, however, does not weaken the remarks contained in my reply to "Amateur," which were offered in vindication of the capabilities of photography, not by any means with the most distant intention of claiming for myself any share of the high honour due to Col. Wortley. Those who know me best well know that I am by nature incapable of being moved by selfish motives in my humble efforts to assist the progress of an art I love, perhaps, too well.—Yours, W. T. Bovey.

MR. REJLANDER'S "PATIENCE."

Dear Sir,—Allow me a corner in your Photographic News to thank "Observer" for his courteous rectification of my quotation under the drawing to which he referred.

"Knowing that tribulation worketh patience" was written by St. Paul to the Romans (chap. v.), and I thought the "Let patience have her perfect work" followed those words; but I now find that it followed "Knowing that the trying of your faith worketh patience," written by St. James (chap. i.).—Yours truly, O. G. Rejlander.

1, *Albert Mansions, Victoria Street, S.W., November* 29, 1869.

THE SEA-GULLS.

Sir,—Having now given all those who choose full opportunity of freely giving their opinions on the method employed in producing the picture of the "Sea-Gulls," we should be glad if you will allow us—if the subject is of sufficient importance—to announce that we intend to send a fragment of the negative to the Secretary of the South London Society for exhibition at the next meeting. We regret that we cannot show the whole negative; but, it having been broken, and most of the parts lost, we can only send a fragment. Fortunately, however, this fragment contains four or five gulls, which, for the purposes of criticism, are as good as a thousand.

We beg respectfully—with the Society's and your permission—to invite the Rev. J. H. Johnson, who asserted that the lights of the gulls were painted on the negative, and the darks scratched out; "A Stuffed Gull," who would stuff a sufficient number of gulls, and hang them over the sea; "A Young Photo," who would have dead birds, and not use a head-rest; "J. Schmidt," whose suggestion is so elaborate; "M.," who would photograph the gulls first, varnish, and then take the sea; "Pyroxyline," who would cut gulls out in paper, scratch holes for them in a sea negative, and stick them in; "Dejai," and many others who have made ingeniously impossible suggestions, as well as all those who have so freely asserted it to be a combination print, to be present at the meeting, and to give us their opinions after they have been illuminated by the new light that will shine upon them through the negative.

Robinson & Cherrill.

Tunbridge Wells, November 30th, 1869.

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Proceedings of Societies.

Edinburgh Photographic Society.

This Society held its ninth annual meeting on the 17th ult.

The Council's report shows that the Society has 212 members, the subscription being only five shillings a year, with five shillings of entrance money.

The Treasurer's report shows a flourishing state of affairs, a balance of upwards of £47 being at the credit of the Society.

The following gentlemen have been elected office-bearers for the ensuing year:—

President—Sheriff Hallard.
Vice-Presidents—Messrs. Slight and W. D. Clark.
Hon. Treasurer—Mr. John Hurry.
Hon. Secretary—Mr. W. H. Davies.
Auditor—Mr. A. J. Niven.
Curator—Mr. John Peat.

The *Council*, of which four members retire annually, is composed as follows:—Messrs. Archd. Barns, Jas. Bryson, Jas. Ross, John McNair, Rev. D. T. K. Drummond, Norman Macbeth, J. D. Marwick, Richard G. Muir, Colin Sinclair, Alex. Nicol, J. H. Douglas, Alex. McGlashon.

The **President** then proceeded to deliver his annual inaugural address. He chose as the main feature of it the idea of "the persistent, continuous, and irresistible advance of scientific truth," showing that whatever else waned, decayed, or died, this did not. It might rest, or it might hurry, but it never died; was always pointing, always working to, always nearing the supposed point of perfection, and always never reaching it, but finding ever new heights to climb, new difficulties to solve, and new discoveries to make. Neither decay nor fluctuation can permanently impede the course of scientific discovery. Institutions change, empires rise and fall, "men may come and men may go," but still under the noblest impulse of our race the march of scientific discovery goes on for ever. He called attention to the fact that there were still hills to climb and difficulties to be overcome before photography became as perfect in permanency as it was at present in results, although the various carbon processes, as well as the mechanical printing processes, were rapidly tending in that direction. The great question of chromatic photography was also yet an unsolved problem, and he was certain that photography would prove to be like all the other departments of science, always advancing, always conquering, and always finding something still higher and greater to conquer. It had already become the handmaid of many of the sciences—in medicine, in jurisprudence, in astronomy, in physics—in all, in fact, wherever exactitude and truthful recording were necessary, there photography was present, and able to do good service in recording what was for the permanent benefit of humanity. After enlarging on several other heads, the President thanked the Society for the honour they had done him, and he hoped, in welcoming them to the scene of their labours and friendly discussions, that the same kindly spirit which had ever reigned through their meeting would still continue. "Many of us hope for photography in natural colours. I question whether it would be an unmixed good; but whether we reach it or not, there is still much to be done before we reach perfection. One or two points I may specify, which we may with advantage try for: one is to produce dry plates as perfectly and as rapidly as wet ones; the other is to secure for silver prints, which I think finer than carbon, a permanency which shall be beyond suspicion."

Mr. **Hall** said that the Society could not adjourn without awarding their thanks to the gentlemen who had taken so deep an interest in the Society's affairs, and he therefore begged specially to move a vote of thanks to their worthy Treasurer and Secretary for the great exertions they had made in keeping the Society's business so thoroughly up to the mark.

Mr. **Davies** replied, and the meeting then adjourned.

Oldham Photographic Society.

The ordinary meeting of the above Society was held on Thursday, Nov. 25th, the President, Mr. **John Green**, in the chair.

The following were elected officers for the ensuing year:—

President—Mr. George Hall.
Vice-Presidents—Mr. J. Wrigley and Mr. G. W. G. Given.
Treasurer—Mr. Samuel Beverley.
Secretary—Mr. J. R. Heaton.
Council—Messrs. H. Andrew, J. Green, J. Hall, H. H. Whittaker, and S. Siddall.

It was resolved that the *soiree* should be held at the "Cemetary Inn" on the 31st of December.

After a vote of thanks to the officers and council of the past year, in acknowledgment of their services, the meeting adjourned.

Bristol Photographic Society.

This Society met on Thursday, the 27th ult., at the Philosophical Institution, Mr. W. **Harding Warner** in the chair.

The minutes of the last meeting having been confirmed and passed, several specimens of various kinds—*inter alia*, one *Lichtdruck*—were handed round, and an interesting conversation on several photographic topics was carried on.

Mr. **Ennel** then discoursed on "Lighting and Glasshouses" (see p. 580).

A lively discussion ensued, and after the usual votes of thanks the meeting broke up.

French Photographic Society.

A meeting of the Society was held on the 5th ult., M. **Peligot** in the chair.

M. **Chafre** presented the Society with a specimen of his new collodion filter, constructed in such a manner as to prevent evaporation of the alcohol and ether.

M. **Despaquis** presented the Society with some impressions in relief produced by stamping upon paper and metal. He took occasion to remark upon the priority of his claim in producing results of this description, which had been called into question by M. Poitevin. That gentleman had, it is true, produced some time since impressions from moulds taken from photographic reliefs, but M. Despaquis contested that his method of embossing or coining, in which a mould and counter-mould were employed, was a new innovation.

M. **Placet** stated that he must press his claim of priority, inasmuch as in his patents taken out in the years 1861 and 1863 he had specified the manner of producing identically the same results as those described by M. Despaquis.

M. **Marion** read a communication upon a modification of the carbon process, and the employment of albuminized paper in connection therewith.

The same gentleman also presented a note on the production of transparent pellicles which were prepared upon metal plates (copper) after the manner of Mr. Johnson's modified process.

M. **Laulerie** called attention to the success which had attended the recent exhibition of photographs in the *Champs*

E ees. Already more than twenty thousand visitors had attended during six months, and it had now been determined to keep the rooms open for another month. He stated that if another exhibition was contemplated for next year, no time should be lost in making arrangements.

The PRESIDENT stated that in consequence of a vote to that effect, it had been resolved to organize a photographic exhibibition for 1870, of which the Committee of Administration would have the care. He further stated that a report would be drawn up of the results of each exhibition; and M. Davanne had been deputed to undertake the task on the present occasion.

M. ALBERT, of Munich, forwarded some specimens of his process, which were greatly admired.

M. DAVANNE, in the name of M. Belbeze, communicated the results of certain experiments which had been made with plates prepared by the Taupenot process, with the object of ameliorating their preservative qualities. It was found that a solution of tea prepared according to the undermentioned formula, viz.,

Water	500 cub. cents.
Tea...	20 grammes
Sugar	25 ,,
Alcohol at 36° Cent.	25 cent. cub.,

if poured upon the Taupenot plates after they have been washed, was instrumental in preserving them in good condition. Better results were obtained after eight days' keeping than if freshly employed, probably from the fact that the plates are then more perfectly dry. Eight or nine months may elapse before the plates are employed, without materially affecting their sensitiveness.

M. BELBEZE had likewise made experiments regarding the treatment of collodio-albumen plates with an alkaline developer. M. Coventry had made some experiments on the subject, and had found that any disposition of the plate to become fogged might be prevented by the employment of a small quantity of bromide of potassium. M. Belbeze found that a one per cent. solution ot bromo-hydrate of ammonia produced the same effect. He recommends, however, the employment of the undermentioned developer, which is invariably successful:—

No. 1.—Saturated solution of carbonate of ammonia.

No. 2.—Alcohol at 40° Cent.	100 cent. cub.
Pyrogallic acid	20 grammes
No. 3.—Rain water	100 cent. cub.
Bromide of potassium	2 grammes

To one hundred cub. cents. of water are added of No. 1 two cent. cub., and of No. 2 and 3, four to six drops, No. 2 being slightly augmented if the development is too tardy, and No. 3 if fogging becomes apparent. If the negative requires to be intensified, pyrogallic and citric acids are used with a little silver.

The proceedings then terminated.

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Talk in the Studio.

FIRE IN MR. BLANCHARD'S STUDIO.—We announce, with much regret, the entire destruction by fire of Mr. Blanchard's studio in Camden Road. On Wednesday afternoon, when the studio had been entirely left for a few minutes, a slight explosion was heard, which arose from the cracking, from change of temperature, of a six-gallon glass barrel ot collodion. Mr. Blanchard rushed into the studio, but before any step could be taken the vapour had become ignited by the gas or the fire in the stove, and in the explosion which followed he was blown out of the room, falling in the garden with a portion of the roof upon him, Between twenty and thirty gallons of collodion, ether, and alcohol, and two or three pounds of gun-cotton, were stored in the room adjoining the studio. These were ignited in rapid succession; and when, after raging fiercely for twenty minutes, the fire was subdued, everything but the brick portion of the building was consumed. Cameras, lenses, furniture, accessories of every kind, dark room equipment, were all destroyed; and a few ashes, bits of shrivelled brass tube, and molten glass, were all that remained. Unfortunately for two or three pupils who were taking lessons, they had left fine apparatus in the studio, the whole of which was destroyed. The manufacture of collodion will be necessarily suspended. We are happy to state that Mr. Blanchard sustained very little personal injury, and that the valuable stock of negatives were in the printing department, where no injury has been sustained. Mr. Blanchard's plant was, we regret to say, uninsured, and the loss is very serious.

THE LONDON PHOTOGRAPHIC SOCIETY'S NEXT MEETING.—We find on reference to the calendar in our YEAR-BOOK that the meeting is, by an error of the press, put down as occurring on Tuesday next, the 7th inst., instead of Tuesday the 14th. Most of the members doubtless remember that the meeting occurs in the second Tuesday in the month, but we point out the error lest any one should be misled. Dr. Van Monckhoven will describe and demonstrate the operation of his new light for enlarging.

THE COLOURING MATTER OF WINE AND LIGHT.—Dr. Phipson has recently made some interesting experiments with the view of detecting artificial colouring matters in wine. He has submitted pure Burgundy and Bordeaux wines to spectroscopic examination, and after ascertaining what kind of spectrum is yielded by the pure colouring matter of the grape, he examined in the same manner the spectrum yielded by light which passes through wine coloured with artificial substances, such as extract of hollyhock flowers, &c. The pure wines yield spectrum characterized by a general absorption, more pronounced towards each end of the spectrum, whilst the colouring matters used to imitate that of the grape usually show one or more absoption bands, more or less distinct, which can be observed even when these colouring matters are contained in the same solution as that of the grape. By means of this simple process Dr. Phipson states that he can readily detect the presence of a foreign colouring matter in any kind of red wine.

A GOOD EXCUSE.—Inventors may be excused from attempting to perfect the photographic process. It is a thankless office to be a "process server."—*Fun.*

PHOTOGRAPHY AND CRIME.—The correspondent of a daily paper says:—"The judicial authorities of Colmar have just sent to Soultz the photographic portraits of the elder Kinck and of Traupmann. The likeness of the latter, says the *Industriel Alsacien*, is the only one existing, for he was photographed at Mazas for the first time in his life, and the negative was broken after a single copy had been taken. Those portraits have been shown to three witnesses, who declare that they certainly saw Traupmann at Soultz. Among them is the woman Lœvert, keeping an inn in the town, and whose depositions, which have hitherto been very vague, have assumed a positive character since she has seen the likenesses. That woman at once recognized them as representing two men who had entered her house one day at the end of August, and, after taking refreshment, had left in the direction of Cernay. Two other persons have identified Traupmann, while the woman Lœvert had no doubt as to the elder Kinck. 'There he is,' she said, 'with his honest face. No one could be mistaken.' His photograph was taken six years ago."

ARTIFICIAL EBONY.—This material is prepared on the large scale in the following manner:—Sixty parts of charcoal, obtained from sea-weeds, and previously treated with dilute sulphuric acid and dried, are ground to powder and mixed with two parts of liquid glue, five of gutta-percha, and two and a-half of caoutchouc, care having been taken to mix the two latter substances with coal-tar oil, and thus to render them gelatinous. Next, ten parts of coal-tar, five of pulverized sulphur, two of pulverized alum, and five of powdered resin are added, and the mixture heated to 300° F. After having been cooled, a substance is obtained which in every respect is equal to genuine ebony wood, but is far less expensive, and takes a finer polish.—*Journal of the Franklin Institute.*

SAVING THE SILVER.—A correspondent of the *Philadelphia Photographer*, writing on a method of saving silver we recently quoted from its pages, says he can pronounce it "excellent, having used the same for a number of years, namely, the old hat plan. But I always use two hats instead of one. The first year I used one hat; but the second year the thought occurred to me that all of the silver was not saved, so I procured two hats, and put one inside of the other. The result was, on working up my waste, that I had three pounds more silver than I had the first year, with about the same average of business."

OLEOGRAPHS.—This term, which was recently appropriated to describe prints from Mr. Tomlinson's "cohesive figures," has been re-appropriated to indicate a new style of very clever imitation oil paintings. The *Stationer* says :—"Oleography is the title given to a novelty that is, we consider, likely to become an institution, and to afford considerable profit to retail booksellers, stationers, and fancy dealers. And such persons may congratulate themselves on the circumstance that a substantial novelty has at last been introduced. As the term "oleography" will not be generally understood, we may state that it refers to a very ingenious and effective process adopted by Signor Ulisse Borzino, an Italian artist, for producing facsimiles of oil paintings. The copies are printed in oil colours, and, being produced upon canvas, such as is used by artists, the realistic appearance is so great that even painters have been deceived as to the character of the work. The colouring is admirable, while the general effect gives a softness and clearness not found in kindred publications. As articles of sale we consider oleographs superior to chromos, as the former can be appropriately used on walls, from which the latter would be tabooed. We commend these goods to the serious attention of our friends, as they permit the realization of good profit, occupy but little space in stock, and may be effectively used for window decoration." We should explain that the pictures are printed on very thin paper, which, when mounted on canvas, takes the grain and texture so perfectly that it is impossible to distinguish them from paintings on canvas.

To Correspondents.

THE ORIGIN OF THE COLLODION PROCESS.—Mr. Baynham Jones favours us with a verbatim copy of the appendix to Le Gray's pamphlet, containing the allusion to collodion, and adds: "If this be the only claim which can be set up for M. Le Gray, I can only say I pity those who have attempted to snatch the honour of the invention from our own countryman, Archer." M. F. and A. L. G. will see that the subject is fully entered into in a letter from Mr. Tunny and a leader by ourselves.

A. A.—The plain collodion referred to is made in France; but you may make the plain collodion after the formula given in the YEAR-BOOK to which you refer: equal parts of ether and alcohol, the former with a sp. gr. of ·725, and the latter about ·820. The proportion of soluble cotton depends much upon its quality; as a rule, four or five grains of a cotton giving a glutinous collodion, or six or seven of a cotton giving a limpid collodion.

COLLODION.—You will find many useful details on the construction of glass houses in our YEAR-BOOKS for 1864, 1865, and 1866. A room of the length you propose, and of a width not exceeding fourteen feet, will answer well. Let it be of the ridge-roof form, running east and west; the principal light on the north side; about five feet at each end of the side and roof opaque; and the rest of the side and roof glass, except a space of about eighteen inches from the ground. On the south side and roof a much less amount of glass will do. Height of eaves, eight or nine feet; of ridge, thirteen or fourteen feet. Each end quite opaque. As a rule, you will work best with the light from north side and roof, the other side being quite covered with blinds; but in very dull weather a little light from the south side may be useful.

W. S. B.—We gave particulars of the mode of working dry plates with Harnecker's collodion, which does not require any preservative. We believe it gives good results. Mr. Solomon is the English agent for the collodion.

C. A. FERNELY.—Thanks. We shall have pleasure in receiving the details. The examples you enclose are very excellent, as are also those at the exhibition.

ASTEOLOGY.—Mr. Woodbury's photo-relief process will answer perfectly. M. Albert's process will also answer perfectly; but we cannot tell you when the process will be practised commercially in this country. The address of Mr. Woodbury is Craven Cottage, Fulham, London, S.W.

T. A. Z.—The registration of a photograph is a necessary condition in securing copyright, but it does not confer copyright in a non-copyright picture. If you have produced photographs of original designs, and the copyright is yours, then, to secure your property in that copyright, you must register it at Stationers' Hall, filling up the form with name, design, and other particulars, and leaving this personally, with the proper fee, at Stationers' Hall. If you write to our Publisher, sending him six penny stamps, he will get you forms and particulars, and will also, if you wish, enter the picture for you at the Registrar's Office. 2. A very dilute solution of gum water, from five to ten grains per ounce, will serve. Try stale beer instead.

J. B. C. F. (Lutterworth).—The stereo print is very good, and the exposure exceedingly rapid for a dry plate. Treating it critically, we should have preferred a little longer exposure and less intensifying, so as to have secured a little more detail in the foreground trees, and a sky not quite so dense.

T. POPE.—Since we do not know the ingredients in "Tunicare," we cannot speak with certainty of its influence on the nitrate bath. At present, we have no reason to believe that it will injure the bath. We hope to give it a careful trial shortly, and shall then report. It appears to give a fine, even, but infinitesimally thin, coating to the glass.

CHROMIUM.—No single lens is suitable for architectural work; it must inevitably give curved marginal lines. Of the two you mention, the rectilinear is doubtless best for your purpose.

J. T.—Of course we shall comply with your request.

THOS. GULLIVER.—Thanks. The illustrations in Reynard the Fox are not copyright, we believe, in this country.

J. T. OTTO.—Thanks for the very excellent and interesting photographs, both by yourself and Mr. Hansen. The photographs, Thorwaldsen's sculptures, and the portraits by the latter gentleman, are very admirable. The portrait of a dog, by yourself, is very capital. It is a splendid head. We are especially pleased to have photographs of pure Danish subjects, of which until now we have seen but very few. The 1s. 3d. was also duly received. Thanks. Let us hear from you occasionally.

B. B. F.—The negatives from which the whole of Mr. Blanchard's specimens are produced are thin negatives, none of them, we believe, having been intensified; but of course they possess a good scale of gradations, beginning in the very deepest blacks with bare glass. Mr. Blanchard uses, so far as we remember, a lime toning bath.

CLARA.—The best plan to remove silver stains from the fingers or from linen is to apply tincture of iodine first; this will change the silver into yellow iodide of the metal, which will be dissolved with a strong solution of hyposulphite of soda. This will remove the stain, and rinsing will complete the operation. A little pumice-stone is useful in cleansing the fingers. In no case, however, use cyanide; it is dangerous and unnecessary. We can understand your surprise on learning the actual facts.

F. JACKSON.—We recommend, as a rule, reduction by the fire and crucible, but you can carry out the wet method if you prefer it. To precipitate the whole of the silver from developing solutions, either allow them to stand in sunlight, or boil them for a time. Then wash the precipitate, and boil it with hydrochloric acid diluted with its own bulk of water. The dark green solution of chloride of iron is then removed, and the filtrate washed. It will consist of metallic silver. Dilute sulphuric acid and heat will also remove the iron. The silver in the washing waters is better thrown down as a chloride, and either reduced in the crucible, or by the wet method. Dilute sulphuric acid applied with a little heat will remove the zinc, copper, or iron. The metallic silver thrown down by any of these metals is in the form of a fine grey powder, very suitable for conversion into nitrate. 2. The needle-like crystals you describe are probably the usual iodo-nitrate of silver crystals arising from supersaturation of the bath with iodide of silver. Dilute the bath with equal bulk of distilled water, filter out the yellow precipitate of iodide of silver, and then sufficient nitrate to make up the proper strength.

H. F.—It is difficult to advise efficiently in such a case without examining the position and surroundings. So far as we can judge, we should either make the room with a ridge-roof, getting the principal side-light from the north, making the greater portion of the southern side opaque, and having as much glass as we conveniently could in the northern roof; or, if we saw a prospect of too much of the north light being shut out, we should then be content with an eastern principal light, building the room of the lean-to form, its back against the dwelling-house. In that case the greater portion of the roof and the east side would be of glass. The angle of roof, in case of the ridge-roof, 40°, in case of the lean-to, about 30°, will be sufficient. Make the room as long, in either case, as space will permit: the width from twelve to fourteen feet; in case of ridge-roof, not more than twelve feet.

ECHOES OF THE MONTH are compelled to stand over until our next. Several articles in type also stand over.

Several Correspondents in our next.

Photographs Registered.

Mr. E. WHITEMAN, Hastings,
Three Photographs of W. J. K. Shuttleworth, Esq., M.P.

THE PHOTOGRAPHIC NEWS.

Vol. XIII. No. 588.—*December* 10, 1869.

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CRITICISMS AND PHOTOGRAPHS.

On another page we print some further criticisms by what we may term, in relation to photography, the lay press; but we cannot reproduce some of the remarks without recording an earnest protest against the tone which characterizes them, and pointing out, in some instances, the gross misinformation or absence of information upon which many of the comments are based. The fatal fear of trickery, the belief that many of the pictures were sophisticated, is again manifested; and any unfamiliar effect, especially if it increase the pictorial character of the products of the camera, is at once set down as the result of some trick or dodge. If these errors of judgment on the part of the critic were merely expressed in the form of opinions, it would be matter for regret; but where they are stated as matters of fact, they become seriously damaging, and cannot be passed without protest and condemnation.

We feel the greater regret to have to make such a protest in reference to the statements of the critic of the *Illustrated News*, whose art criticisms are generally so able, and who has frequently before this done much justice to photography. We can only attribute the serious errors in his criticism to misinformation and misconception of facts. At the outset, we should correct a serious misconception in relation to the character of the exhibition. The exhibition is spoken of not only as something organized by the Photographic Society, but is evidently regarded as something purveyed by the Society for the benefit of photographers; and we are told what should be the one great object of the Society, in its annual displays, and what it should have exhibited, but has omitted. Now this is really an exhibition for which facilities are organized by the Photographic Society, and nothing more. Photographers throughout the country are invited—whether members of the Society or not—to send such works as may be of interest to photographers generally and to the public. The Society does not attempt to exercise any control over what is sent, beyond the right of rejecting anything unsuitable. It does not attempt to provide anything for exhibition, beyond inviting and encouraging all producers of good work to contribute. If any important branch of the art were unrepresented, it was a loss to the exhibition, but a still greater loss to the photographer neglecting to contribute, as he forfeited an unusual opportunity of securing that publicity which is so important in introducing novelties to the public. We do not remember, however, any important branch of the art which was unrepresented.

However much we may differ from the views of the writer in question, that the main object of such an exhibition should be to afford chemical and mechanical information to photographers, and on some other matters of opinion, it is to his statement that "artifices falsificatory of nature" were rife, especially in portraiture, and that a large proportion of "tricky nondescript productions" were exhibited, that we feel bound to protest against and to correct. "Many of the heads in this collection," it is said, "were intentionally photographed with extreme vagueness, in order to admit of after treatment with the pencil." Here is a definite statement which, taken in connection with the general statements as to sophistication, would tend to cast doubt on all the portraiture exhibited; and we unhesitatingly reply that the suggestion of this general sophistication is utterly groundless. We believe that no exhibition held for some time has had so few examples of retouching of any kind, on either negative or print; and, speaking with an intimate knowledge of facts, we doubt whether, amongst the contributions of any importance, there was a single instance in which vagueness or imperfection of any kind was intentional, with a view to after treatment by the pencil or otherwise. In fact, we are free to confess that we never heard of such during a tolerably long and intimate acquaintance with the art and its adherents. The best portraits exhibited were not touched at all, in either negative or print, and the mass of the portraits were unsophisticated by any elaborate working, the work of the pencil being confined to a few slight touches on print or negative, for the purpose—as the late M. Claudet used to phrase it—of "correcting" errors or blemishes, not to over-lay or alter the truth of photography.

We differ from the critic in question as to the legitimacy of retouching; but this is, of course, a question upon which opinions may fairly differ. We hold, as we have repeatedly said, that success is the touchstone of legitimacy. If the artistic truth of a photograph can be improved by retouching, the process is legitimate. If the art qualities or the veracity of the picture be in any degree impaired, the operator or the operation are clearly censurable. But we cannot help pointing out that our critic has utterly mistaken the whole question. He deprecates retouching photographs because "they lose in beauty as well as truth, because they necessarily omit or obliterate those delicate half tints which record the more subtle traits of character and expression." If this were true, we should emphatically agree in its condemnation. But the primary purpose of retouching, wherever it is attempted judiciously, is to supply the half tones upon which true delineation depends, but which, by bad lighting, under-exposure, over-development, or other chemical and mechanical errors, have been obliterated. Retouching, except in the hands of occasional Vandals, so exceptional as to be unworthy of consideration, is intended to be a succedaneum for the errors, inherent or accidental, of photography. The inherent errors are not numerous, but they exist; photography does not always translate colour into an equivalent monochrome, and variations of tint in the skin, such as freckles, which may be scarcely perceptible in nature, are at times rendered as coarse black blotches, and skilful retouching may legitimately modify the defect. Accidental defects, such as bad lighting, bad chemicals, under-exposure, over-development, &c., may obliterate many of the delicate gradations, and leave a gap in the true scale by which modelling and texture should have been rendered, and this gap may be judiciously filled up by retouching. But surely no one would be barbarous enough to suppose he could improve a really good photograph by working upon, so as to obliterate, those delicate half tints which record the more subtle traits of character and expression! There was a time when prints stippled with indian-ink or sepia so as to cover up the photograph were common, but such abominations have long since passed out of vogue.

The statement that "art and photography are so essentially distinct that the product of the one can receive no addition from the other without mutual detriment," must surely be intended to be understood in some non-natural sense; or the epigrammatic form of the sentence has tempted the writer into the old danger of sacrificing truth to epigram. Without considering the mode of production, the result in any mode of monochrome portraiture, whether produced by the draughtsman, the engraver, or the photographer, is an image in light and shade of a solid body. The exact form and expression is in all cases expressed by gradations of light and shadow. A few touches by the artist, intensifying light, deepening shadow, or uniting the two by more perfectly and delicately marked gradations, can give more truth, expression, and modelling to the drawing or the engraving; and upon what possible principle can it be argued that the same artist, adding similar touches where they were similarly required, should not also add to the value of the photographic portrait, especially with the photograph for his guide not to overstep the modesty of nature?

A somewhat unfair sneer is thrown out in reference to "the class of colourists who can alone be tempted" to colour photographs. To this we may simply remark, in passing, that many painters of great ability, and some of good and recognized position in art, have undertaken such work. Many of the best artists, both in sculpture and painting, obtain photographs as guides in their work; and some—we may mention the late Sir Watson Gordon as an example—in preparing a preliminary sketch, paint upon the photograph, which they first attach to canvas, as affording a better guide than "ordinary draughtsmanship."

Many of the individual criticisms in the article in question, especially where not warped by erroneous misconception, are just and discriminating; and notwithstanding the dictum, in general terms, that by "no possibility, whilst it retains any of the nature of a photograph, can it [the photograph] acquire the best characteristics of a work of art," a whole page of the paper is devoted to an excellent engraving of Mr. Slingsby's clever composition, "Early Summer," which is, after a general protest against combination printing, described as a remarkable success. "The well lighted figures, the minute detail of the landscape, and the soft sky of light clouds are," we are told, "here brought into harmonious relation with each other with scarcely the slightest visible discrepancy or deficiency. The natural, unaffected way in which the children are grouped, arranging their wild flowers of spring time, also deserves warm praise."

The brief notice from the *Gentleman's Magazine* errs grievously in matters of fact. It states that landscape painters have taken to old tricks, such as painting-in skies. The common watchword crops up again in expressing the fear of "tricks;" but we question if in truth there was a painted-in sky in the exhibition. Surprise is expressed that the carbon prints exhibited are made to retain the sepia tint of ordinary photographs, when they might so easily produce "the more artistic tones of rich engravings." Whether black tones are always more artistic than sepia is open to serious question; but, as a matter of fact, by far the greater proportion of the carbon specimens exhibited were of the rich black of engravings.

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CURIOUS NOTE ON THE AMERICAN ECLIPSE PHOTOGRAPHS.

Mr William Crookes, F.R.S., favours us with a note as follows:—

Dr. Morton, Professor of Chemistry in the University of Pennsylvania, has kindly forwarded me photographs of the phenomena of totality. By combining in the stereoscope pairs of these, separated by intervals of about half a minute of time, the black globe of the moon appears projected far in front of the luminous prominences and the corona, which are therefore clearly seen to belong to the sun. Glass transparencies from negatives specially selected for this purpose, and appropriately mounted, would show these phenomena in a very striking manner.

◆

THE PHOTOGRAPHIC EXHIBITION.

In landscapes generally, as displayed at the late exhibition, there was probably less novelty in style than in portraiture, but the same advance in pictorial qualities was noticeable. Brilliant, good technical photography seemed to be a matter of course, but there was the manifest aim to embody artistic feeling. Besides the compositions to which we have referred as special features of the display, the majority of the landscapes exhibited were distinguished by the presence of skies instead of white paper; these, in many instances, are produced by a second printing from negatives taken for the purpose, and judiciously selected and combined.

Mr. Vernon Heath, who has for some years adopted this plan, exhibited some very admirable landscapes, tender and delicate, as well as brilliant, and essentially distinguished by the feeling of atmosphere. Mr. E. C. Buxton exhibited a variety of landscapes with figures, in all cases admirably chosen and treated. Mr. Alfieri sent a good display of landscapes, in all of which artistic feeling was manifest. Mr. Stephen Thompson exhibited some very charming scenes, full of technical excellence, rendered with exqusite taste and manifest appreciation of his subject. His examples included some rich bits of Italian architecture, and not less picturesque bits of English rural scenery in the form of "Kentish Homesteads."

Mr. England was, as usual, admirable in Swiss scenery. His contributions, besides their pictorial excellence, had another special source of interest, as he exhibited, side by side, a frame of eight examples of the wet process, and eight examples, from similar subjects, of dry plate work. Both were, as in all Mr. England's work, in all respects exceedingly fine, but it was possible for the critical observer to note a little more hardness and wiriness in the prints from dry plates than in those from wet plate negatives. To those interested in the relative value of dry and wet plates these pictures were very instructive. The dry process employed was the gum-gallic process of Mr. Gordon, which Mr. England thinks on the whole the best dry process he has tried. He preferred the alkaline development because he found it permitted the plates to be kept longer before development without detriment to the result. Mr. England brought home this summer about four hundred negatives taken by this process, and arrives at the conclusion that although the plates may be kept for some time, they gradually decline in sensitiveness and certainty, and that for satisfactory results they, and every form of dry plates he has ever used, should be used within a week of their preparation. Mr. Whiting also exhibited some very excellent landscapes by the gum-gallic process, which were in every way satisfactory. Mr. Howard has some landscapes by the gum process, which are exceedingly perfect, and distinguished by artistic feeling. The plates by the coffee process by Mr. F. A. Mowels were interesting examples of that mode of dry plate work.

Mr. Gordon's charming landscapes were, we believe, by the wet process. We might refer to these as the highest possible illustration of technical excellence—as the most perfect combination of softness, delicacy, detail, and brilliancy; but, notwithstanding this, the technical qualities are so subservient to the artistic feeling, that they are only noted as a secondary consideration. The admirably poetic rendering of the sense of desolation in the wrecked hull of a vessel lying on the shore, the wide expanse of sea and sky beyond, and no other object in sight but the stripped, battered hull, in every sense a wreck, is perfect. The exquisite little landscape, with a rivulet and a country lassie about to cross, is a gem which every one covets the moment he has seen it.

One feature of interest in this exhibition is the presence of many landscapes of large size, and in almost every instance the large size is accompanied by great excellence. Of Mr. Earl's fine large landscapes we have before spoken, and we may here add that few things exceed in beauty his charming rendering of the Vale of Neath. Mr. Wardley's large landscapes by the collodio-albumen process are in every way fine, being massive and large in treatment, a characteristic not by any means necessarily belonging to work on large plates. The "Fairy Glen" was very charming, as also "The Towers and Beach, Conway." Messrs. A. and G. Taylor exhibited some large and very fine views of Highland scenery, which were very satisfactory. Mr. W. D. Sanderson was also successful in large landscapes.

Amongst the most interesting subjects in the exhibition were the views in and about Athens, by Mr. W. J. Stillman, American Consul at Crete. The skill, care, and judgment exercised in producing these, and in the selecting of lenses and points of view, in securing portions and complete views, so as to present a complete series, affording ideas of proportion and character, could not, unfortunately, be duly estimated in the cursory examination possible in an exhibition. The pictures, some of which had been produced on dry plates, were in all cases admirable.

Of the Indian temples and Eastern views of Captain Lyon we have before had occasion to speak. Perhaps no series of pictures in the exhibition excited more attention or gained more universal and ungrudging admiration. The wonderful and interesting nature of the subjects did not excite more admiration than the rare excellence of the photography. When the difficulties of the work, and all the circumstances under which it was produced, are remembered, this series must be admitted to be one of the greatest triumphs of modern photography.

Not in the catalogue, but worthy of careful attention, were some very fine landscapes by Mr. Brownrigg, of Dublin. Hung sadly below the line of sight, but worth some trouble to examine, were some unusually fine landscapes by Mr. Brooks, which have recently taken medals in Cornwall and Devonshire. Mr. Slingsby's "Drinksey Nook" was another landscape well worth a little trouble to examine. Mr. W. W. Rouch exhibited a series of unusually fine landscapes, delicate, brilliant, and atmospheric, and in all instances distinguished by very fine taste. Mr. W. Durrant's half-dozen views of yachts, unfortunately hung too low, were in every way capital. Mr. Beasley's Swiss views were exceedingly fine. Mr. Rump had some good examples of the gum process, as had also W. J. A. G. Many other excellent landscapes, by Captain Pocklington, and by Messrs. Irvine, Nicholls, Hayman, Morgan, Dunmore, Jewell, Downer, Lemenager, Ferneley, Livesay, Davies, Michell, Smith, and others, must, we regret, be passed over with general commendation, for lack of space.

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ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Enamel Photographs—The Exhibition and the Critics—Mr. McLachlan's Great Picture—Mr. Sutton and the "Times"—Mr. Blair's Suggestion for Shortening Exposures—Origin of the Collodion Process—Fire in Mr. Blanchard's Studio—The Societies.

When the facility for producing photographic images in enamel colours exists, and so much encouragement may be derived from the success of those who have devoted themselves to the production of photographic enamels, is it not a little surprising that so little has been done in this direction? Several of the methods, it is true, are protected by patent, and their practice is somewhat restricted by this circumstance; but there are several modes which are quite open to the public: Poitevin's method with perchloride of iron; the method of mixing vitreous colours with gelatine, as in carbon printing; and some of the modes of transforming a silver image into a suitable metal for burning-in, as in Grune's and Tessie du Motay's processes. It may be interesting to mention a fact recently pointed out to me by an expert in ceramic operations, that an essential distinction may be generally noticed between the results produced by applying vitreous powder colour to a sticky surface, and the results obtained by burning-in the image formed of a suitable metal obtained by transformation of the silver image. The enamel produced by the former method is bold and solid, but generally in some degree coarser and more opaque than the other, showing a slightly granular surface; whilst that produced by the latter is more delicate, transparent, and completely embedded in the glassy surface of the enamel. As examples of the latter results my friend pointed out some of the fine specimens of Mr. Henderson; but as his are by a secret process, I cannot avouch the fact or characteristic personally.

The exhibition, which has been such an unparalleled success, has been visited by such a constant influx of visitors, that it has been a common question: Why not make a charge for admission? Those who are familiar with the history of the former exhibitions can readily give an answer. It is found that a charge, however moderate, will deter very many persons from visiting an exhibition. It is true that the attractions of former photographic displays were in many respects inferior to those of the exhibition just closed, but they were open at a time when the art itself had much more of the charm of novelty. So long as the Society can manage the exhibition on the present moderate terms, it is very desirable, I think, to avoid making any charge for admission. It is more important to induce a large number of visitors to come and see the progress in the art, and the capacity of the artists, than it is to make a profit of the enterprise. I should like, another year, to see an exhibition equal or superior to that just closed duly announced to be kept open for a month. The mode of printing the catalogue as a part of the Journal, as first suggested by the Editor of the News, will, doubtless, be continued, and the profits of its sale alone may probably be made to bear a share of the expenses of the exhibition. There cannot be a doubt also that considerable advantages will accrue to the Society from undertaking such an exhibition. I am told, for instance, that about a dozen new members will be proposed at the next meeting of the Society, and it cannot be unfair to assume that some of these may have been induced by the excellence of the exhibition to join the Society which had organized it.

The praises of the exhibition have been "hymned by nobler harps than mine," and echoed from week to week. The terms of eulogium have been—and deservedly—almost exhausted. The amount of attention bestowed on it by the outside press is in itself a proof of the interest of the exhibition. But it is not a little saddening to note how much of the old indisposition remains in the critics to recognize art qualities in photographs, notwithstanding the pre-eminently artistic character of many of the pictures exhibited in Conduit Street. "Can any good thing come out of Nazareth?" may without irreverence be regarded as a typical cry. Where the photographs show higher and unfamiliar pictorial qualities, the critic jumps to the conclusion that it is due to some trick, and, what is worse, he too often states his impressions of this kind for facts, and public credence is abused by false impressions from trusted sources.

I am told that Mr. McLachlan has made a very great success of his colossal combination group of the Committee of the Cotton Famine Fund, and that Mr. Arthur Hughes, in painting it, has done the subject very full justice. I believe that the Autotype Company are likely to issue it in carbon for publication. It will form an admirable memento of a noble band of men, and a creditable souvenir of the skill and perseverance of an enthusiastic photographer.

It is a little amusing to note the traps which inconsistent and reckless people sometimes voluntarily enter. A writer in one of the journals undertakes to review the *Times'* review of the exhibition, and to give it the weight of his support, without knowing anything of the exhibition, not having seen it at all. He proceeds to rail against "sophisticated photography" and "photo-crayons" in good set terms, and declares that "amongst continental photographers these things find no place at all." Without dwelling on the fact that touched or sophisticated photography is, on the continent, the rule, and not, as here, the exception, or on the fact, which I have heard, that Mr. Sarony received a much larger order in France for the lithographed designs for photo-crayons than in this country, I wish to come to a certain point; it is this: the writer who has not seen the exhibition invokes photographers to "listen attentively to the teachings of an eminent man [the *Times* critic] who has a high appreciation of all that is really good in photography." Now what does this eminent authority—and I willingly concede the eminence—say on the subject of photo-crayons? He describes "three charming female heads in carbon,* on glass, by Bullock, at the end of the large room, which, for grace and refinement, seem to us to bear the palm from all the portraits here." Now these charming portraits, which bear the palm, are the much-abused photo-crayons. Surely it was unkind of Mr. Tom Taylor to lodge Mr. Sutton in trap like this!

The re-examination of old ideas with the aid of new light is often a very instructive employment; and, opposed as it may seem to all modern photographic principle and practice, the idea of admitting other light to the plate beyond that passing through the lens and forming the image does not, as explained by Mr. Blair, appear to be altogether unphilosophical. If his first assumption, to the effect that a certain part of the force of light is expended in overcoming inertia, or commencing, as it were, the change in the sensitive salts, be proved to be true, his conclusions, I think, must follow. At any rate, the subject is well worth careful investigation.

It is curious to find, nearly twenty years after its introduction, that the origin of the collodion process should still be a subject open to discussion. Like many similar things, it would seem to have dawned on many minds almost simultaneously that collodion might be used in photography with advantage. Dr. Diamond states, in one of his letters to *Notes and Queries*, that he had heard that a collodion process was tried in Vienna early in 1850. Glass was coated with plain collodion, then immersed in a solution of iodide of potassium, and next in a nitrate bath. These experiments were said to have had a limited success, and were not published. Le Gray, an able experimentalist, undoubtedly had dabbled in collodion experiment, but apparently with very vague ideas of its possibilities, but was probably sufficiently suggestive to enable a shrewd photographer like Mr. Tunny to produce results. What a pity he did not publish! Mr. Archer undoubtedly first gave the world a practicable process; but I can quite understand the statement, in Mr. Tunny's letter, that Mr. Archer failed when he attempted to demonstrate the process; for it is well known, in the circles who were familiar with the history, that he invariably sent to Dr. Diamond for specimens to be shown on any especial occasion. I have often heard expressions of wonder that Mr. Archer had not patented the process. A glance at the circumstances surrounding will show how difficult a thing it would have been to obtain a patent for it. Nevertheless, to all practical intents and purposes, I think Archer is properly honoured as the introducer of the *collodion process*, as we understand the term.

There are those who doubt whether the collodion process has been really a great boon, since it tended essentially to vulgarize photography, and make the cheap and nasty possible; and further, that it tended to make the profession of photography less healthy, as well as less profitable and less creditable. This is a point which I will not discuss.

The fumes of collodion have another danger, quite as serious as the risk to health by inhaling them. I mean the danger of fire, so calamitously exemplified in the burning of Mr. Blanchard's studio a few days ago; I cannot presume to suppose that every precaution was not taken by a photographer so experienced as Mr. Blanchard; but I cannot help making a suggestion as to the importance of avoiding keeping a stock of collodion in any room where a flame of any kind, either in a fire or as a light, is employed. The stoppers of collodion bottles are not unfrequently blown out, and, in falling, sometimes break bottles; and if a flame enter the room when the vapour has accumulated, an explosion is inevitable. Good corks are, by the way, better than stoppers; and collodion bottles containing stock are better kept on the ground or near it than on high shelves, as the heavy vapour is then much less likely to occasion risk.

The Societies generally are in active operation, with good prospects—at least, the majority of them. The North London Society, having, it was thought by the officers, achieved its work, has been dissolved, this course being considered better than dying a lingering death. *Requiescat.*

ACCELERATION OF EXPOSURES.

Second Notice.

BY WM. BLAIR.

I now propose to take up this matter where I left it in my last article, and to explain how it is possible, to some extent, to take advantage of *reflected*, as contradistinguished from *diffused* light within the dark slide. But before entering upon this, I may be allowed to express my satisfaction that the views and suggestions stated in my former paper appear to be strongly supported by the practical observations of some who have used diffused light in various ways with advantageous results. Such testimony goes far to show that the theory has a foundation of truth to rest on, although I have not yet had the opportunity of attesting it very strongly myself by camera work. Should the way and manner in which diffused light operates on a sensitive plate be more fully understood by this discussion, there cannot be a doubt that it will be found usefully available for more purposes than can well be anticipated at present. Here is one little advantage I have experienced to begin with: I have now made my *dark room* more comfortable to work in than hitherto, by the admission of more light; and I have taken all the dark wrappings from my glass bath, so that I can see the plate in the act of being sensitized. The superstitious horror of seeing things distinctly within the dark *sanctum* has thus, I hope, given place to a more *enlightened* belief and better practice. Of course, when I get chemicals that will not stand the faintest trace of light without befogging, the former darkness may have to be restored, or the chemicals rejected as too quick for ordinary practice.

I observe that it has been proposed to line the inside of the camera with yellow glass, but I doubt the propriety of having anything with a *glancing* surface in front of the plate under exposure. I would prefer a dead white surface as more safe. Nothing, I think, can be better than plain white paper, such as I understand was used by Mr. Eastham, of Manchester, and which is the material that I have myself to some extent tried.

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* The *Times* is in error; these pictures are not in carbon, but photo-crayons, consisting of collodion transparent positives backed with paper, with and without Mr. Sarony's lithographed designs.—Ed.

Now, as respects the dark slide: let us see if anything can be done here to assist the general illumination.

My impression is, that what are called rich creamy films are considered, as a rule, more sensitive than films of a thin and semi-transparent character. There may be exceptional cases—that is, some collodions which yield a film of a thin transparent character may be more sensitive than others which give a more opaque film—but the chemicals being otherwise equal, or similar, in their nature, I fancy the general testimony is, that the more opaque film (within, perhaps, certain bounds) will be found the more sensitive. In my present remarks, I assume this to be a fact borne out by general experience. What, then, is the reason of this? One rather evident reason seems to be that the opaque film interrupts and absorbs more light than the transparent one. What penetrates the film and sinks into the dark ground behind goes all to waste. It is only the light that is caught and stopped by the chemicals within the film that disturbs their molecular quiescence. A perfectly transparent film might naturally be expected to be very insensitive.

These ideas are further borne out by another circumstance. Wet sensitized films are generally found more sensitive than dried ones, whatever be the preservative used; and this accords with the fact that sensitive films become more transparent on drying. There is thus a loss in the power of light brought to bear on a dry film as compared with a wet one. Of course I am aware that the dry state of the film may in other respects be hostile to sensitiveness, but I am at present only referring to that phase of the question which involves the waste or loss of light.

In the dry processes, however, and sometimes in the wet, we have often to work with very transparent films. and the question is, how can the light in such cases be best economized?

I have now been a good deal accustomed, chiefly by means of one or other of the dry processes, to take reversed negatives in the camera, for the purpose of printing with certain of the carbon processes, for which this sort of negative is required. There is no difficulty in taking such negatives, and if what is called colourless glass be used there is scarcely any loss of light by transmission through the glass. If there be any loss, this, I think, must be more than compensated by backing the plate in the slide with a sheet of clean white paper. It should be padded behind, so as to be kept close to the film; indeed, I see nothing to hinder the use of a mirror or polished surface instead of white paper in this case, only the common glass mirror would not answer well, as the reflecting side would not be sufficiently close to the film, and if it were not quite close, it might produce optical halation.

It will at once be evident how the white paper or reflecting substance at the back of the film operates. Whatever light penetrates through the film is immediately reflected, and transmitted a second time through the film, or absorbed within it from behind. The sensitive film has thus nearly the same advantage as if it absorbed all the light on its first passage, or, at least, was struck by it, and reflected what it did not absorb. By the retransmission of the light which has passed through to the back, the exposure must, in a considerable degree, be accelerated.

To this plan, however, I am prepared to hear an objection started. It may be said that it is only the more powerful lights that will penetrate the film and be reflected, and that these would be better shaded or otherwise modified, as witness the efforts that have been made to shut out light in certain cases by means of sky and cloud stops, &c. There may be some truth in this, and the arrangement that I have mentioned may not answer for universal adoption; I merely state the method for what it may be worth, and for use only where it may be thought an advantage. But I think it will be found, not only that the high lights, but a large proportion of the half-shades will be promoted by the above arrangement. I have not yet tried landscapes, but I have tried some portraits by this plan, and found that a peculiar softness of shade was produced, considerably different in appearance from ordinary photographs. Besides, in regard to landscapes, it has generally been considered desirable to have sunlight when taking these. In dull weather, however, the white padding may be found an advantage in heightening the contrasts. This arrangement, in connection with the white lining in front, may perhaps produce as much illumination within the camera as will be found desirable in ordinary circumstances.

But further, the white backing may be varied to suit particular cases, and to produce special results. For example, it has often been made matter of complaint against photographs that there is usually a want of illumination in the foreground of views. Might not this be obviated to some extent by a graduated sheet of paper behind, dark opposite the sky, and graduating into white towards the lower part of the picture? Or, suppose that a lens has a tendency to give too much illumination in the centre (some would say get a better lens), the back paper in that case could be darkened in the centre, and graduated into white towards the edges, where more light is required.

It now only remains to be enquired how far the arrangement I have been attempting to explain can be applied to wet or dry plates exposed with the film in front of the glass, and on the side next the lens in the usual way.

The only thing that occurs to me in regard to this is, that the film would require to be spread upon a *white ground.* Opal glass might be used—best, of course, having only one side opalescent—so white as to promote rapidity of exposure, and so transparent as not greatly to retard printing. For some pictures, rapidity of exposure is the all-in-all. A little delay in the printing is a matter of very subordinate importance. Even with ordinary glass to be used for this purpose, where the collodion does not yield dense films, but is otherwise good, I see nothing to prevent that side of the plate which is to support the film receiving a previous coating of albumen or gelatine, or suitable varnish, mixed with some semi-transparent neutral or neutralized white pigment, which, while it would be more transparent than paper for printing through, would be sufficiently white and opalescent to compensate for any over-transparency in the collodion, and give the negative, during exposure, the benefit of reflected light in the camera. In this case, also, there could be no sensible halation. And, by the way, would not this be as good a plan for preventing halation as the method so frequently resorted to of smearing the back of the glass with yellow and black paint?

It will be seen that the above suggestions for the use of *reflected* light may be available in the case of semi-transparent films, but can be of little service where the films are sufficiently dense to interrupt the whole or greater part of the light thrown upon them. It should be remembered, however, that if the rest of the camera be lined with white, then it is important, in order to generate diffused light within the camera, that the surface under exposure to the lens should possess a rather high tone of whiteness, in whatever way produced; for it is chiefly by the light reflected from this surface that the front part of the camera can be filled with a subdued radiance to react upon the plate, and this might be further assisted by the frame which holds the plate being whitened.

It would not be difficult to construct the dark slide so as to throw weak or reflected light on the back of the plate during exposure, if that should be thought of any benefit. In this case the back door of the slide could be made of yellow glass, which might be uncovered in whole or in part during exposure, or a white surface could be given to the back lid inside, to reflect such light as might pass through the plate. In this case the back lid would require to be at some little distance from the plate—perhaps a couple of inches or so—to allow the reflected light to spread well. But while I make these suggestions, I believe it will be found most effective that the diffused or reflected light, in whatever way produced or admitted into the camera, should be brought to bear on the face, and not on the back of the plate, so that the faintest impressions from the lens may have the full benefit thereof.

But I need not weary with suggestions of a purely mechanical description. If we are now to hold it as a well-established fact that either diffused or reflected light is an accelerator of impressions in the camera upon sensitive plates, then we may be sure that practical men will soon find out the best way of using it. I shall merely say here that I suppose it will be judicious, if not absolutely necessary, always to subordinate it to the principal exposure; but this may vary, and be regulated somewhat by the nature of the developer intended to be used. The exposure to diffused light may sometimes be carried so far as slightly to veil the negative without material harm; indeed, it may often be necessary to go this length in order to make sure that we have got the full benefit of it for bringing up the fainter details. These details, from their additional exposure to the influence of the light, should, in developing, keep in advance of those parts which have only received the diffused light, and nothing more, and so soon as the details are fairly up, the development can be stopped. Further development could do no good, but harm. Fixing, and further intensification, however, would still be available.

Bridgend, *Perth*, *November*, 1869.

EXHIBITION OF THE PHOTOGRAPHIC SOCIETY.

(From the *Illustrated News.*)

The collection of photographs which, last week, was brought together at 9, Conduit Street, was widely, but far from completely, representative of the present state of the art. We cannot help thinking that an exhibition organized by the Photographic Society for photographers chiefly, and held for only a few days, should have partaken less of a shoppy character. Information respecting the chemical and mechanical progress of the art, and calculated to further its advancement, should be the one great object of the Society in its annual displays. This object is not aided, however, by the exhibition of many scores of portraits and views, of no unusual merit whatever, and exemplifying no novelty of process; still less by the large proportion of those nondescript tricky productions which sacrifice more or less of that which is really valuable in photography, by concealing it under that which is of very little or no worth as art. At all events, an attempt should be made by the Society to give distinct prominence to examples of the newest principles and of the most recent methods, and to render those examples more complete than on this occasion. We missed, for instance, any samples of the permanent photography in oil colours and other media, introduced by Mr. Pouncy, of Dorchester. Mr. Pouncy was one of the earliest pioneers of permanent photography; indeed, we firmly believe him to have been the first to render possible permanent photographic printing in carbon, ink, oil colours, and by other processes for which patents have been obtained, though, like many other inventors, he has not received fair recognition or reaped the reward due to his labours. Even the permanent process of the "Autotype Company" was but imperfectly represented in Conduit Street, for there were no illustrations of the scope it affords for employing coloured chalks, sepia, Indian ink, and other materials which render it exactly adapted for the reproduction of drawings by the old masters. We could have wished to see, also, some specimens of Mrs. Cameron's unique skill in obtaining on a large scale artistic effects of breadth and softness, by working with a moderate-sized lens, and placing her subjects more or less "out of focus." This lady certainly discards some of the definite scientific accuracy procurable by photography; but her principle is founded on certain great artistic truths distinguishing the impression the mind derives through our binocular vision from the image received in the mindless, so to speak, one-eyed camera.

The collection reminded us of no absolutely new or important discovery as having been made during the year; and the various details of the more recent processes are of little interest except to actual manipulators. The union of delicacy with permanency should now be the primary aim of all photographers. The application of Swan's carbon process by the Autotype Company (gelatine being the medium for the carbon and other pigments used) was shown by some carbon reproductions of old engravings, &c. There were also specimens of permanent photographs in carbon and colours, by the Marion, Albert, and other processes. The contributions of the Autotype Company were far superior to some of its very indifferent early productions; but they were surpassed by those of certain of the Company's licencees. We may say, in short, that permanent photography has reached a stage when the continued use of the fugitive salts of silver for the final "print," as in so many works in this exhibition, is almost inexcusable.

In attempting any estimate of the relative merits of the contents of such a collection as that under review, great care should be taken to adopt true principles of judgment, and to discriminate between legitimate and illegitimate sources of attraction, otherwise the more honest the photographer the greater may be the disadvantage at which he is placed. The conscientious photographer, whatever his knowledge, experience, and taste, who puts forth the unsophisticated product of the sun and the camera, will not be able to compete, in the estimation of the unthinking, with any unscrupulous bungler who calls in the aid of elaborate stippling and the allurements of colour. The caution is the more necessary in reference to photographic portraiture, for in this—to satisfy the demands of vanity—artifices falsificatory of nature are especially rife. Many of the heads in this collection were intentionally photographed with extreme vagueness, in order to admit of after-treatment with the pencil. Yet those flimsy productions were probably more admired by the superficial than the most exquisite marvels of pure photography. To more competent observers, however—those capable of reading the language of photography—they lose in beauty as well as truth, because they necessarily omit or obliterate those delicate half-tints which record the more subtle traits of character and expression. Art and photography are so essentially distinct that the product of the one can receive no addition from the other without mutual detriment. When, as in the case of some solar camera enlargements by Mayall, the photograph is overlaid with opaque oil paint (especially by the class of colourist who alone can be tempted to such employment) the result can scarcely fail to be a coarse caricature. So far from the basis of photography ensuring fidelity of resemblance, as is commonly supposed, the very outlines are liable to be lost; and thus even the general proportions are often less accurately retained than they would be rendered by ordinary draughtsmanship. When water colours, and those chiefly transparent, at least for the flesh, are alone admitted, and the best skill procurable is pressed into service, as in the miniatures and carbon photographs by Lock and Whitfield, the result is rather less objectionable, and certainly far more pleasing. Perhaps, however, the practice of extensively "retouching," with the same hue as the photograph, not merely to conceal accidental blemishes, but to heighten and alter effects, which we detected to be more prevalent than ever in this year's gathering, is even less excusable, because intended to deceive—to say nothing of its often producing in the flesh tints a hard monotonous smoothness, quite destructive of that very texture which an artist strives to obtain. The moment, indeed, a photograph is wrought upon by the pencil, its scale of effect is destroyed, it loses the scientific exactitude which is its true value; and by no possibility, while it retains any of the nature of a photograph, can it acquire the best characteristics of a genuine work of art.

Let it not be supposed, however, that we intend to imply that artistic feeling and taste count for nothing in photography. On the contrary, a wide field is afforded for their operation in choosing the point of view, in regulating the light and shade, in the posing of figures, and arranging the accessories. But we submit that a negative once taken should not be tampered with, and we cannot, therefore, allow attempts at pictorial composition by combining two or more negatives to be legitimate applications of photography. The different elements of the combination are rarely lighted harmoniously; indeed, the lighting can never be in perfect relation, and cast shadows from figures are often ignored altogether. For example, the incidence of the light on the children in "Over the Sea," by Messrs. Robinson and Cherrill, is very different from that on the sea, as we remarked in reviewing this "combination" some time back. At the same time much credit is due to these and other contributors, particularly to Messrs. Rejlander, Slingsby, and Hubbard, for the artistic knowledge and great ingenuity evinced in their several combinations. One of the least prejudicial violations of the conditions of direct photographic representation is the now common addition of clouds to landscape views. This combination was effected with much judgment in several instances by Messrs. Robinson and Cherrill, some of whose "skies" were among the softest and best chosen with respect to composition; others, being rather too dark for the effect of the view, were overpowering. These photographers also sent a frame of cabinet portraits distinguished by beautifully tender breadth of light and shade, and some ambitious costumed heads. Mr. Rejlander re-exhibited his complex but forced and theatrical figure-composition, entitled "Two Ways of Life;" and in other subjects the desire to overstep the limits imposed by the nature of photography were manifest, as in a large half-length, elaborated by hand in sepia, of a school girl, called "Kept In." Throughout the numerous contributions of this photographer there was, however, a ready inventiveness of artistic "motive," and constantly recurring evidence of regulative taste, that was unrivalled. Many of Mr. Rejlander's studies and portraits contain suggestions which a painter could turn to excellent account. The difficulties of combination were overcome with remarkable success in "The Milkmaid" and "Early Summer," by Mr. Slingsby, of Lincoln. The latter, in particular, is so considerable a triumph that we have selected it as the subject of an engraving for next week. The same photographer also exhibited some meritorious portraits. Another still more difficult *tour de force* was accomplished with fair success in Mr. Hubbard's "Stolen Moments;" a cottage interior, wherein a girl was seen reading a letter in the light from a lateral window, a further room being seen through an open doorway. The chiarescuro here reminded one of an interior by Ostade, but the cast shadow projected from the girl's figure on the wall was obviously "touched." An exquisitely picturesque little photograph of a Highland lassie crossing a brook was contributed by Mr. Gordon.

It was evident, from the most cursory inspection of the portraits, that many English photographers have been emulating the brilliancy in the flesh, and the deep rich tone of the accessories in the portraits of M. Adam-Salomon. When portraits by this eminent Parisian photographer were first exhibited in Conduit Street, we hazarded the assertion that they owed much of their effect to working with a more confined aperture for light, and to extensive retouching. At the time our assertions were denied by some of the highest photographic authorities in the country; their truth has, however, subsequently been universally admitted and acted upon. English photographers have now no secrets to discover from Mr. Salomon's practice beyond that of artistic taste and propriety, in which he still excels. Several of our photographers working in his style commit faults of excess and affectation by striving for startling effects of light and shade, novelty of attitude and costume, assumption of expression and character. The remark applies to large portraits by Blanchard, and the three heads by Robinson and Cherrill already mentioned. Several of those by La Fosse, Ashdown, Tradelle and Leach, and Briggs were, however, excellent. But the greatest success in portraiture was attained by Colonel Stuart Wortly, in three heads—one costumed and treated to resemble Holbein's portrait of Lord Vaux; another in a hood and ruff, also recalling Holbein; and a third of a lady, snooded with a lace mantilla. The second was most fascinating for its gentle and lovely expression and delicate breadth of mellow half tint.

In another branch of photographic art the last named contributor made a decided mistake in exhibiting a series of instantaneous photographs of sunlight veiled by clouds as representations of moonlight. The sudden brilliancy of the sunlight, being contrasted with black printing of the clouds and views, necessarily differed widely from the subdued scale and pervading softness of moonlight. Vernon Heath, one of the earliest introducers of skies in landscape, sent some instantaneous "studies" of clouds, calculated to be of service to the landscape-painter. By the same, also, there were several small subjects on the screens, and views in the Trossachs, which, by judicious choice of subject and point of view, and beauty of half-tint, more than compensated for occasional imperfection of manipulation. For technical merit few landscapes equalled a series of large views in the Vale of Neath by Mr. Earl. Other good landscape work was exhibited by Messrs. Sanderson, England (Swiss views), Wardley, Brooks, Rouch, Buxton, and Whiting. The most important function of photography—that of supplying, so to speak, documentary evidence as to facts; that of recording infinite detail with a clearness and accuracy which it would be hopeless for the painter to attempt—was, however, nowhere illustrated so forcibly as in a series of views, by Captain Lyon, of the Hindoo temples and pagodas of Southern India. As photographs none taken under the sun of India that we have seen approach these in excellence. They form a noble supplement to the researches of Mr. Ferguson. They bring home to us, with a vividness to which no other means could pretend, a new world of architectural forms and sculptural details of figures and ornament. Both the structural forms and ornament are exhaustless in their variety, and generally marvellously strange and fantastic, though always singularly bold and admirably ornate in effect; but some details appear to be curiously familiar, as an often-recurring ornament resembling the Roman floriated scroll. Three albums of photographs, by Sir Henry James, illustrating the Ordnance Survey of Sinai, likewise exemplify the great value of photography in the way of record.

(From the *Gentleman's Magazine.*)

Again have the photographers invited the public freely to an exhibition of their latest productions. Some four hundred specimens decorated for one week of the past month the walls of the Architectural Society's Museum in London. There were plenty of things to admire, but nothing to forcibly strike a visitor. The light painters, reporting progress, may say, "As we were." One might have expected an extensive display of pictures by the carbon and other modern pigment processes; but the majority of the subjects were upon the old albuminized paper, with here and there a sample of dead, or mat, surface printing. No doubt, however, these pigment processes are at present too complicated for small producers. The Autotype Company—an association for working Swan's method of carbon printing—covered a large space of wall with specimens. An uninitiated visitor, however, would not have distinguished these works from others, for, strangely to my view, the artists persist in imitating the sepia tints of ordinary photographs. Now that they can produce any colour, they might adopt the more artistic tones of rich engravings. Curiously, when blacks were producible with great difficulty and risk of permanence, everybody wanted them; now they are easily secured, and yet the old browns are retained. The Woodbury process, which prints in gelatinous ink from intaglio photo-types, was unrepresented. Portraiture is still under the influence of M. Salomon's example. Landscape operators have taken to old tricks, such as painting-in skies and printing-in figures which do not belong to the view, and betray their individuality by lights and shadows that are not in accord with the rest of the picture. Some twelve years ago the public were astounded by several large sea and cloud pieces by Gustave Le Gray, which, from their dark moon-light effects, were thought to have been really taken by moon's light; but they were day-pictures, and the sun caused the grand play of light and shadow on sea and in sky that was attributed to the moon. A series of revivals of this old ruse was exhibited by Colonel Stuart Wortley—grand pictures of cloud and water, proving the high skill of their producer, but, being ticketed with lunar titles, very deceitful to the popular eye. Old things seem to have been exhibited for want of new. Mr. Rejlander sent his great "composition print," entitled "Two Ways of Life," formed by the combination of thirty negatives, and first exhibited twelve years ago; and Mr. Mayall contributed Daguerreotype views of the Great Exhibition of 1851. These had interest, as showing the permanence of what were once thought would prove the least durable of light pictures. Few paper photographs of that date could now be shown in such integrity as these mercurialized plates of silver.

Correspondence.

WHO WAS THE AUTHOR OF THE COLLODION PROCESS?

Sir,—I can hardly believe that anything that can now be said can affect, one way or another, the well established title of Frederick Scott Archer to be considered the author of the collodion process; and, for myself, am abundantly satisfied to leave the matter where he put it, giving, as he has done, full credit to Gustave Le Gray for all that he has claimed.

But how comes it that Mr. James Good Tunny, that dreadful Iconoclast, cannot pass the door of the temple of fame where the effigy of Mr. Archer lies enshrined, but he must enter with sacrilegeous feet, and begin to belabour it with a bag of wind, which he tells us he has done a thousand times?

I am much afraid that the motive is not much to the credit of his noble candour, of which the grave Editor of this Journal has just discovered that he has had a burst. For what does he do? He takes his countryman, whom he says he loved, by the scruft of the neck, and patriotically shoves him down the back stairs; and takes the modest foreigner, and puts him on the roost, and holds him there with his protecting wing until the time arrives when, in the course of nature, the great protector requires to flap his wings; and the pusilanimous Frenchman drops off then. Cock-a-doodle-do!

I'm monarch of all I survey,
My right there is none who disputes!

Mr. Tunny has boldly entered the lists for the second time, and thrown down the gauntlet in honour of himself and Gastave Le Gray, and in defiance of, as I think, the righteous claim of Frederick Scott Archer, and he must not complain if I or any one else take it up as defiantly as we can, with the hope that the lists will not be closed until this important matter has been for ever set at rest; for on a former occasion, now some twelve years ago, when I broke a lance with this doughty champion in the same cause of quarrel, the editorial staff was thrown down, and the grand tournament closed after the first round.

Upon returning to the charge, I looked first at the royal proclamation that the contest was prorogued, and I read no more, believing that nothing that was new and also true could be said to affect my position; and until this day I have no idea what Mr. Tunny said then in his defence, to my contention that he had no earthly claim to be considered either an inventor or discoverer, he, for no fault of his own, being disqualified for the part, that he was profoundly ignorant of the use of collodion until I taught him Mr. Archer's process with Mr. Archer's chemicals.

But as the story of the introduction of Archer's collodion process into Scotland may interest some readers, I propose to give it circumstantially, as I believe the sequel will show that I have the best right to speak authoritatively on the subject; and with this view will take a glance at the state of photography, both in Edinburgh and in London, before the advent of the collodion process.

I was first led to take an active interest in photography, now upwards of twenty years ago—that is, in September of 1849—by becoming the possessor of a set of apparatus for and taking lessons in the Daguerreotype. That led to an introduction to Messrs. Ross and Thomson, of Edinburgh, from whom I received some additional lessons, and where I found that both the Daguerreotype and the Talbotype processes had for long years been successfully carried on. Very shortly after this the albumen process came out, and was so successfully practised by that eminent firm that their fame was extended at home and abroad.

I got also some lessons in this new process, which, in brief, was to cover a glass plate with iodized albumen, and holding it at the fire with the fingers until it was dry. I suggested some improvement in the mode of drying the plates, which was at once put in practice, by taking a piece of wire and making a loop at either end, and doubling and twisting this wire into a sort of spring tongs; a piece of string completed the arrangement, which was used. The coated plate was caught by the two opposite corners in the loops of the spring tongs, and suspended horizontally before the fire, coated side down, with a gentle twirling motion; this gave a more equal coating, and the hint was considered important, as affording the power of preparing plates of any size.

About this time, 1850, Mr. Tunny and I, having met before, were re-introduced to each other in the new capacity of amateur photographers, and often met at Ross and Thomson's, when submitting our experiments.

About the beginning of 1851 some sensation was created by a notice of some experiments by Fox Talbot of an instantaneous process on glass, and of which the formula was published, by which the flight of a cannon ball could be photographed as well as a figure upon a rapidly revolving wheel, illuminated by a flash of electricity. Then came the publication of Archer's collodion process; and, upon enquiries in London for further information as to Fox Talbot's instantaneous process, the opinion was suggested that this new collodion process was the most hopeful.

I made a holiday trip about the latter part of June, to see the great exhibition, and, on arriving in London for the second time, I was much struck with the size and beauty of the Daguerreotypes exhibited in many places. In due time I made my way to the establishment of Messrs. Henneman and Malone, in Regent Street, at whose door I saw a great display of Messrs. Ross and Thomson's large views of Edinburgh, with which in every way I was so familiar. Having been furnished with a letter of introduction to them from Mr. Ross, I was welcomed, and, at their request, was proceeding to demonstrate my method of preparing albuminized plates, when a gentleman entered—I believe a countryman of my own—who volunteered to show the new collodion process. Another visitor, who spoke in French, and, if I remember rightly, whose name was Martin, was invited with me to witness the experiment. For this purpose, the party of five persons, including our instructor, proceeded to the glass house on the roof, where four phials were produced, and a plate coated, excited, and, with a sitting of five seconds, a negative produced as if by enchantment—so new, so beautiful, and rapid. The lesson was given in the most methodical style, even to the removal of the collodion stopper, and where to hold it while coating the plate, so as to make it impossible to forget to replace it. I made a careful note of the composition of the new developer, &c., and was courteously informed that I could get all the chemicals from Horne and Thornthwaite's, in Newgate Street.

It is worth mentioning, to show the freedom and liberality with which this process was made public, that on making my purchase of collodion, &c., at Horne and Co.'s, which did not exceed in value 12s. or 14s., the shopman remarked that if I chose to wait a moment, Mr. Wood would be delighted to go over the process with me.

I came home with my bottle, labelled "Archer's collodion," with its accompaniments, and lost no time in repeating the experiment in Messrs. Ross and Thomson's rooms. I next visited Mr. Tunny at his modest little place, he having now resolved to try his luck as a professional, and there again went over the process with him. I made many subsequent visits to Mr. Tunny's studio, as he, being a beginner, was not so overwhelmed with sitters as my other friends; and upon one of these occasions, when a lady had some unsuccessful sittings for her Daguerreotype, I was permitted to try a collodion plate, as I knew the lady, and the result appeared to be quite satisfactory.

At this comparatively late date, the collodion process seemed still to remain everywhere in the hands of a few amateurs, and I humbly opine that Mr. Tunny is wanting in generosity in never acknowledging the assistance he received from a gentleman whose name I may not mention without his sanction. This was Dr. T., a doctor in the navy, who was then enjoying his leisure in the neighbourhood of Mr. Tunny's studio. These gentlemen experimented for days and weeks together, and many a message was sent for the errant doctor to come to his dinner. The results of their labours were soon apparent, for one day I was invited by them to sit for a portrait, and was presented with my negative - the head and bust—on a quarter size plate.

This photograph was taken with collodion, gun-cottton, and all manufactured on the premises, and developed with iron, and was equal to an average picture of the kind now-a-days. This was in the latter end of 1851, and at least three months after showing him the process. W. M'Craw.

FIRES IN STUDIOS AND LABORATORIES.

My Dear Sir,—Will you allow me to take advantage of the unfortunate occurrence at Mr. Blanchard's studio to give a word of caution to many photographers on the matter of fire?

Long impunity from danger makes some altogether overlook the very inflammable and explosive nature of the fluids in daily use. An open fire or stove in the vicinity of the laboratory is most reprehensible. The one perfect system which all should, if possible, adopt is, heating by hot water. You have then no dust, no clearing up, nor carrying scuttles of coals about, and, greatest boon of all, no risk of explosion or fire. The first cost is considerable, but by no means ruinous.

In my own place I have six rooms effectually warmed by a boiler, placed behind the kitchen fire, communicating with circulating pipes four inches diameter. Three stoves and one open fire were previously insufficient to keep the place really comfortable.

The vapour of ether in collodion, being heavy, will roll along a floor or downstairs a very long distance, and may ignite far away from the place where it is poured. The consequences are always disastrous, water being almost useless to extinguish the flames then produced.—I am, dear sir, very truly yours,

Surbiton, December 7th, 1869. Samuel Fry.

FRONT LIGHT STUDIO.

Sir,—"Ennel" is an eloquent, but not on that account a trustworthy, writer; in fact, some of his arguments, although well put, are thoroughly misleading, and I wish to enter a most emphatic protest against his recommendation of a front light studio.

I have worked constantly in one for five or six years, and at last, tired out, I have just pulled it down and built it up with a large side-light, the principle of which I have learned through years of hard toil and thought. The result answers every expectation, and is as far before the old one as light from darkness. I shall soon have more to say about it, but hasten to lodge this hasty protest.

Specimens of the average of work from both rooms shall be laid before our Editor. Let photographers beware how they again put faith in front lights. "Ennel's" modifications merely involve details; there is nothing new in *principle* in them.

There is one of the arguments rather amusing: "We take sitters from the front, *therefore the front should be the predominant light*." I should put it thus: *therefore* we want the predominant light from the side. People do not take a landscape or a building with the sun plump behind their camera.

"Ennel" should *try* his front-lighted studio before recommending it in such high-flown language on merely theoretical grounds.

One foot of glass in *front* will spoil and deaden the effect of a good many feet of glass properly placed. Moderator.

Proceedings of Societies.

Edinburgh Photographic Society.

Professor Piazzi Smyth and His Work at the Pyramids.

At the second meeting for the session of the Edinburgh Photographic Society, held in Craigie Hall, 5, St. Andrew Square, Sheriff Hallard in the chair, there was a crowded attendance, and many were unable to obtain admission—the feature of attraction being an address, with photographic illustrations, by Professor C. Piazzi Smyth, Astronomer-Royal for Scotland.

After some formal business had been disposed of,

Professor Smyth proceeded with his address, the subject being—

"A POOR MAN'S PHOTOGRAPHY AT THE GREAT PYRAMID,

Compared with that of the Ordnance Survey Establishment, under the Orders of Colonel Sir Henry James, R.E., at the same place four years afterwards."

He said that every traveller to a strange land ought to photograph, and the vital problem was, how shall he, if a poor man, accomplish it? Do not fancy because a man was poor therefore his work must be necessarily bad, or his experiences uninteresting, for it was some of those poor men who were the most ambitious souls after excellence in a community. Urged on by their very poverty, they often struck out useful inventions, and though, if their instrumental apparatus was measured with a mere material foot-rule, it might often appear pitiably small, yet by so much had it a greater prospect of entering into and passing through the eye of the needle of nature than the ponderous coaches of the rich. Many poor men before him had already described to this Society, and many others, he doubted not, would still describe, how they had succeeded in accomplishing one and another difficulty in photography, despite slender means and forbidding circumstances. He therefore appeared now as merely one of a large acknowledged band of workers, not as the first nor by any means most worthy, but simply as one who had undergone peculiar pressure—as one compelled, by a sudden combination of rich, powerful, and most uncompromising persons in the south, either on the instant to speak out to the world, or to allow the favourite subject of his researches for many years to disappear from henceforth and for ever beneath a heap of erroneous assertion, malevolent abuse, and bad photography, which those opponents had thrown upon it. Under these circumstances what could a poor man, and one who believed in his subject, do but stand out and speak forth? When he went to Egypt, now just five years ago, he went, though accompanied, encouraged, and assisted by his constant helper and the partner of all his joys and sorrows,—yet he went as a private individual and a poor man. He alone, excepting perhaps one individual in this country, saw the exceeding importance of modern scientific examination being applied, without further delay, to that most ancient architectural monument of all the earth, the Great Pyramid. He alone would run any risks with regard to it, and was left, by both Government and all other authorities, to find his way out and pay all expenses at the Pyramid on his very slender salary, not calculated to bear any such burden. The strictest economy, therefore, had to be the order of the day. As there were several other subjects of scientific observation, and many of them very important ones, to be disposed of first, there was sadly little left for photography. But this photography must be taken, for what monumental research in the present day could be carried on without its marvellous aid? It must be taken, but the apparatus could only be *very* small. He had an apparatus capable of taking pictures so large as three inches square, but he was subsequently led to regret that extravagance, as he found an apparatus with glass plates capable of taking pictures one inch square quite sufficient. After stating that that apparatus for taking single pictures had been already described to the Society, Professor Smyth went on to explain the system he had adopted in taking double or stereoscopic pictures, and remarked that the rich man had servants to bring home his large negatives in ponderous boxes, and they proceeded to busy themselves according to his instructions, to take copies from them in the usual methods, the views being mechanical transcripts of the negatives bounded by the mere material sides of the camera. Not so, however, acted the poor man, with his little box of very little negatives, brought home modestly in his waistcoat pocket. With this box of little negatives he set himself at a table with an achromatic microscope—either a single or double one—which had been prepared in order to allow two pictures to be seen at once, and to be seen stereoscopically if required—an instrument which they owed to the father of one of the latest-appointed, and not the least, of the professors in the Edinburgh University, Mr. Lister. Altering the magnifying power of this instrument at will, the poor man proceeded to examine and roam over, as it were, each and every part of his magnified picture. He roamed over it, the monarch truly of all he surveyed, and discovered details he never dreamt of before, and then he decided in his own mind how a positive copy should be taken. He might also put the question to himself, "Will scientific research be better observed by taking out that little spot from the rest, and magnifying that so as to make a whole positive picture of that one item alone?" With all these notes taken at the microscope, the poor man proceeded to put his little negatives into the magnifying camera, and thereby produced all those pictures which had been chalked out in idea. The Professor pointed to a number of pictures which were exhibited in transparencies in the hall taken in that way, and remarked that in one of the magnified pictures, from a negative of about an inch square, they would be able to detect the very threads in the dress of an Arab, who occupied but a small portion of the whole surface. That, Professor Smyth went on to say, was the manner in which the poor man performed the photographic part of his Egyptian work—labour of love it was—in the grandest field, and in the noblest cause connected with the history of nations and the origin of civilization that time had yet opened up before the modern world. That work, and that glorious cause, after three more years of untiring labour, he endeavoured to set before the public in his volumes, "Life and Work at the Great Pyramid," and "The Antiquity of Intellectual Man." And now, after one more year had passed, and before he had recovered his extra expenditure, what, thought they, had been the poor man's exceeding bright reward? It had been this: a coalition of rich and powerful individuals, residing in and about London, had suddenly broken into his subject with the most ridiculously expressed hostility to himself, and utter determination to upset and destroy everything he had done with regard to the Pyramid. He had had the honour within the last few weeks to receive from them, under cover, marked "On Her Majesty's Service," and described also as one of the public documents of the Ordnance Survey of Great Britain, the document which he now held in his hand. That pamphlet, entitled "Notes on the Great Pyramid of Egypt, by Colonel Sir Henry James, Royal Engineers, Director-General of the Ordnance Survey," wherein the writer, although he gave a catalogue *raisonnée* of all the observers and measurers of note who had been at the Great Pyramid from the time of Professor Greaves, of Oxford, 230 years ago, down to his own officers and men last spring, had carefully left out all notice or mention of the poor man, his works, his measurements, his books, and photographs, and everything he had done about the Pyramid—that was to say, all direct mention of them, for by indirect insinuation, or anonymous abuse, he indulged in denouncing them as vicious absurdities, extravagant nonsense, and folly worse than anything that could be possibly paralleled from even mediæval ages of total ignorance in science. That was surely a very agreeable document for the Astronomer-Royal for Scotland to receive under cover "On Her Majesty's Service." If that were true, and to be told also that a pamphlet containing it all was expected, not only to serve for the information of grown persons, but be used far and wide for the instruction of the rising generation, as it said, "in our national and other schools," and finally to hear that the expense of this magnificent onslaught upon him had been most liberally and most generously paid by that so wealthy lady in London, whom he had never seen, Miss Burdett Coutts,—under such circumstances should he be altogether silent? He should not say very much upon the subject on the present occasion, because he had already demonstrated sufficiently elsewhere the errors, and something much worse than errors, of the literary and numerical portions of the pamphlet. It only remained now for him to consider the photography, and, before so experienced a meeting—a meeting learned in photography—to inquire what there was in the photographs of this coalition pamphlet that justified them in their attempt to stamp out and expunge ignominiously out of existence the poor man's previous work of the same order, in the self-same field? The photographs or photo-zincographs in the pamphlet were only four in number. The first of them had nothing to do with the Pyramid at all, but was part of a Mahomedan building at Cairo, and was besides, as the Professor explained, defective. The next was said, in the introduction, to exhibit something of the general form of the Great Pyramid; but the chief and most prominent object in it was made to be, by a mere trick of the military photographer, not the Great Pyramid, but that atrocious and horrid idol, the Great Sphinx. So far away into the distance had the Pyramid been pushed in order to let the Sphinx shove its noseless face into the foreground, that nothing could be made out of the successive courses of masonry in the Pyramid. Another of those pictures was given as representing the second Pyramid, on which the casing-stones on the top still remained in their places. There, again, they found that horrid idol—that idol of all idols—the Great Sphinx, stared them in the face. Were the Royal Engineers sent out to Egypt to do honour to, worship, and reverence that iniquitous relic of ancient heathendom, the half-bestial Sphinx, or to measure the Great Pyramid, and illustrate its pure and blameless masonry? Let their works speak for them; and for what they would teach the poor little innocents, as they said, "in our national and other schools," let their works speak for what was in their hearts, especially when compared with one of the poor man's photographs, illustrating exactly those identical casing-stones which they ought to have given in this picture. The last of the four pictures was stated in the introduction to show the position of one of the sockets, but there was absolutely nothing of the sort identifiable in the photograph; and in reference to a statement to the effect that they were "only covered by a little sand easily removable by the hand," he said that was such a flat, uncompromising, and merciless contradiction of what he published in his volumes, that he had nothing to do but turn to his faithful photographs, which could not lie, and which shewed that the sockets were only reached after cutting down into a semi-concreted limestone and soil of rough stones. What possible advantage was likely to accrue—he meant for getting more exact knowledge of the Great Pyramid—from the poor man's work being covered with obloquy and consigned to oblivion in order that its place might be taken by this curious pamphlet, which was sent about the country under covers "On her Majesty's service?" Who, too, were the members of her Majesty's Government that were implicated in the transaction, and what it implied? These were questions vastly too deep for him, and therefore he must leave them in the hands of the general public to settle.

The CHAIRMAN proposed a vote of thanks to Professor Smyth for his address. Mr. Smyth, he said, had, more than almost any man with whom he was acquainted, the power of imparting a peculiar charm to anything he touched. He was not there to express any opinion whatever on the theory of the Pyramids to which Professor Smyth was so much attached, but what they had before them that evening was, a contrast between two photographic results—the one produced by an official gentleman wielding, to some extent, the power of the State, backed by the wealth of a very rich lady; on the other hand, they had photographic results produced by a gentleman working without those funds, but working with scientific talents almost approaching to genius, and with the most indomitable perseverance and energy. They would soon see, by judging of the results before their eyes, which of these two series of photographs came out victorious in the contest.

The audience then, as they retired, inspected with much delight a large collection of transparent photographs of the Pyramids.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

A SPECIAL general meeting of the Association was held at the Common Hall, Hackin's-hey, on Tuesday, the 23rd ult., to alter the rules of the Association, so that in future the annual meeting for the election of officers should be held in November instead of in January, the President, Mr. O. R. GREEN, proposing, and Mr. BELL seconding, the motion, which was carried *nem. con.*

In accordance with this, the sixth annual meeting was held on Tuesday, the 30th ult., at the Free Library, William Brown Street. There was a large attendance.

The President, Mr. O. R. GREEN, on taking the chair, first called upon the Secretary to read the minutes of the last monthly meeting, which were duly confirmed. He then gave his reasons for summoning the special meeting, the minutes of which were also read.

Judges of the prints sent in for the prize competition were next appointed—Messrs. Phipps and Atkins; the Rev. T. B. Banner referee.

A letter was read from the Secretary of the Oldham Photographic Society, requesting contributions of specimens for their *soirée*, which several members agreed to accede to.

Mr. HENDERSON exhibited some prints on Obernetter paper, and described the mode of using it.

Mr. SLEDDON showed an enlargement, some transparencies, and specimens in which quassia had been used as a preservative.

An interesting and practical paper was next read by Mr. LEWIS HUGHES, on "Photographic Enlargements of Microscopic Objects," for which he received a vote of thanks.

The judges of the prints having given their decision, they were awarded as follows:—

No. 1. For the best year's work, entirely the production of the competitor, to Mr. John Henderson.

No. 2. For the best picture not less than fifty inches area, entirely the work of the competitor, to Mr. A. Tyrer.

No. 3. For the best photograph under fifty inches area, the entire work of the competitor, except preparation of the plate, to Mr. W. H. Wilson.

No. 4. For the best transparency, the plate to be prepared by the competitor, to Mr. Sleddon.

No. 5. For the most artistic photograph, to Mr. John Henderson.

Mr. HENDERSON, referring to a recent letter in the *British Journal*, by Mr. Dawson, said that the method there named of preserving collodio-bromide of silver had been practised for years by members of the Association.

The TREASURER then read his report, which was considered very satisfactory.

The SECRETARY next read a report containing a summary of what the Association had accomplished during the past year. It may be briefly condensed here. Monthly meetings had been kept up throughout the year, which is not usual in kindred societies. These had fully maintained their interest. There had been a net increase of six members. There had been six papers read on separate occasions. One meeting was devoted chiefly to an exhibition of photographs, and another to a beautiful display of lantern slides by the oxyhydrogen light. There had been six excursions during the year, two of which were of a most enjoyable character—that to the Valley of the Weaver, when a steamer was placed at the disposal of the members by the kindness of Mr. Thomas Higgin, and that to Chirk, when a large party of members and friends partook of the President's hospitality.

The **Secretary** was next called upon to read the minutes of the Council meeting, at which the gentlemen whose names were to be recommended for election as officers for the ensuing year had been agreed upon. As a resolution for the re-election of Mr. O. R. **Green** to the office of President had been carried, he made the following remarks:—

I now ask you to give your attention to the election of a president for 1870, and in doing so I feel considerably embarrassed. I should be very sorry if, from anything which I should say, you should form the impression that I think lightly of the honour you conferred upon me at the beginning of the year, and which your Council has recommended you to renew. I consider it a high honour to have been elected by so many of my fellow amateurs to the post of honour in our Association. I only regret that I have been able to do so little to further the art during the past season, and when I have been brought in contact with the energy, ability, and perseverance of some now around me, I have felt a wish to vacate the chair in their favour. During the year 1870 the British Association for the Advancement of Science will hold their meeting in our important town, and the eyes of men in all countries who search into the mysteries and laws of creation will be fixed upon the proceedings. Our Association, amongst other local societies, will be called upon to contribute something to interest the eminent visitors who will come here to impart, and, I hope, glean, instruction. It is, therefore, desirable that you should elect a gentleman for president who will have leisure for the occasion. As regards myself, although the spirit is willing, I am certain I shall not have the time to attend to it. I therefore hope you will not be offended by my now asking you to allow me to decline the honour of being your President for the year 1870. I am sure there are others in the Association who have more time, more ability and conveniences, and, I may add, are more deserving of the honour than myself. If our senior Vice-President has the time, he has the ability, the zeal, and the interest of the Association at heart, which should make him worthy of the honour. I therefore beg to propose him to you as President for the year 1870.

The undermentioned officers were elected for the year 1870:

President—Mr. John Henderson.

Vice-Presidents—Mr. E. Phipps and Mr. Thomas Higgin.

Treasurer—Mr. Lewis Hughes.

Auditors—Mr. W. H. Wilson and Mr. Atkins.

Honorary Secretary—Mr. Joseph Guyton.

Mr. R. C. Johnson, Mr. Tyrer, the Rev. G. J. Banner, and Mr. O. R. Green to be members of the Council instead of Mr. Roberts, Mr. A. Cooke, Mr. R. Cooke, and Mr. Hubback, who retire in rotation.

The usual votes of thanks to the President and others were passed. The presentation prints were distributed to the members present, "The Quarry Road," by Messrs. Robinson and Cherrill, and the session of 1869 terminated.

North London Photographic Association.

The closing meeting of this Association was held in Myddelton Hall on the evening of Wednesday, December 1st, Mr. **Wharton Simpson** in the chair.

The minutes of a previous meeting having been read and confirmed,

The **Chairman** explained that the duty of members would be to pass one of the resolutions which had been submitted for their consideration. It appeared to have been already decided that the objects for which the Association had been formed had been carried out, and, from a variety of causes, the interest in meetings had flagged. Under these circumstances the Committee, with the sanction of the members generally, had come to the conclusion that it would be better to wind up at once, instead of continuing a feeble and unsatisfactory existence. He could not but feel some degree of regret that it should have been necessary to come to such a conclusion, but there appeared to be no alternative. In the report of the Committee submitted to members three courses were suggested. The first was—"That the Association be continued as an art-union and club, and that the funds in hand be appropriated to that purpose." This, it had been already determined, he understood, it was really not in their power to do. The members could form such a club, of course, but this Association could not devote its funds to such a purpose. The second proposition was—"That, in the event of the dissolution of the Association, it is proposed that the funds be appropriated to the advancement of photography, by handing them to the Photographic Society of London in lieu of entrance-fee and subscription for any member of this Association who may join that Society during the present year, such members to be entitled to all the privileges of the Society to the end of its current year, without further payment, provided the said Society is willing to accept the funds on such conditions." The funds in hand amounted, he understood, to about £20, and they had reason to believe that the Parent Society would accept this sum as the consideration money for entrance and subscription until February, for as many of the members as might choose to join. The third course was—"That the funds of the Association be expended in the purchase of a photograph to be presented to all members who paid the subscription for the year 1868-9, and the Association be dissolved." As they had about a hundred members, this would give about four shillings per head for a presentation print to each member. It would now be the duty of members to decide which of the courses they would adopt, and which would best carry out the general wishes of the members. The first proposition was not practically before them; but he would just put the matter as a matter of form, to ascertain if any wish existed for reconsidering the possible right of the Association to become a club, and would ask those present who agreed with the Committee in condemning that proposition as beyond their province to signify the same by a show of hands.

After a general show of hands agreeing with the Committee in the condemnation of this project, a desultory conversation arose on the other propositions, in the course of which Mr. **Hart** strongly urged his conviction that the original purpose of promoting the art of photography would be best fulfilled by amalgamating with the Parent Society.

On putting the questions to the vote, the last was carried by a large majority.

The **Chairman** then stated that the Committee would act until a presentation print had been procured and distributed amongst the members. The portfolio and box of prints belonging to the Association, and now in the hands of Mr. Barnett, the Secretary, he would move, should be placed at that gentleman's disposal.

This vote was carried unanimously.

After some further conversation and a vote of thanks, the **Chairman** declared the Society dissolved, and hoped to meet many of the members at the meetings of the active South London Society or the flourishing Parent Society.

Talk in the Studio.

Prints and their Production.—On Wednesday evening Mr. Davenport read a most interesting paper at the Society of Arts, on the subject of prints and their production; in the course of which he gave a brief historical sketch and description of the various modes of producing prints of all kinds, including the various photographic processes. The lecture was illustrated with an exceedingly valuable and complete collection of examples of all the graphic arts, and included specimens of various modes of engraving and lithography, of various kinds of photography, photo-lithography, and photographic engraving. This very complete collection of examples will remain open to the public until Saturday afternoon, or possibly longer; and during some portion of each day Mr. Davenport will kindly be in attendance to give information in relation to the processes and examples. We strongly urge those who can to avail themselves of such an opportunity of seeing valuable specimens. The pressure on our pages prevents our giving any portion of Mr. Davenport's paper this week, but we shall in our next.

Photography and Etching.—We have recently seen the illustrated edition of Hood's "Miss Kilmansegg and her Precious Leg," just issued by Moxon and Son. The illustrations consist of a series of most admirable etchings, full of originality and character, drawn by an amateur, Mr. Seccomb, of the Royal Artillery, and etched by Mr. Joubert. The especial point of interest to our readers consists in the fact that the drawings were photographed on the etching ground. As the subjects generally are very elaborate, many of them having several scores, perhaps, of minute figures, the drawing on the plate would have been a formidable undertaking, and, in this instance, would have rendered it impossible to get the work done in time for the issue of the work this season. Producing the design on the etching ground by photography not only saves much time and labour, but gives an accuracy not otherwise attainable. The process employed we have not ascertained. The problem is to find a process which shall give a sufficiently definite image for the etcher on the black ground of wax, &c., with which the plate is coated.

Destroying Photographic Specimens.—We learn from the Melbourne papers that Mr. Bandmann, the tragedian, has been fined one shilling for "wilfully and maliciously" destroying a case of photographs belonging to a photographer named Norman. The smallness of the fine is accounted for by the provocation under which the tragedian committed the act referred to. It seems that the photographs placed Mr. Baudmann in a ridiculous light, inasmuch as they represented him attired as Narcisse in the character of Hamlet. It speaks well for our artists at home that, although nothing can exceed the ridiculous light in which many of them, especially the *danseuses*, are daily exhibited by photographs in the shop windows, they never attempt to destroy these works of art. The provocation, moreover, is greater than that which roused Mr. Bandmann to fury, the error committed in his case being only the substitution of one set of garments for another, whereas our actresses might plead, in extenuation of their taking the law into their own hands, that their photographs represent them as wearing hardly any garments at all.—*Pall Mall Gazette.*

To Correspondents.

E. H. (Cheltenham).—The form of gelatine designated grenetine is a French preparation, and we do not know of any one keeping it in this country.

Enquirer.—Powder colours may be applied to paper prints, but they are only suitable for pictures which are intended to be placed under glass, as the powder colours are easily rubbed off. You will find instructions for tinting in transparent water colours in the book you possess. The task is not a difficult one if you have taste and patience. The colours sold by Mr. Solomon are also easily managed.

A. A.—If you observe a little more carefully, you will find that two formulæ are given in our Year-Book, one with two parts of alcohol to one of ether, and another with equal parts of each, and in our answer to you last week we indicated the sp. gr. of each. Either may be employed, but the latter is most available, as it is not always easy to obtain alcohol of ·805 sp. gr. The collodion employed by Mr. England is not kept in this country; he procures it direct from the maker in Paris. Sometimes he uses Mr. Rouch's plain collodion in its place. It is very probable that the plain collodion of either of the makers you mention would answer.

B. W. (Bourne).—We cordially agree with you, and shall have pleasure in giving publicity to your views on the subject. The card is charming.

Z. Frenchman.—The oleographs in question are kept in London by Messrs. Sampson, Low, and Co., Fleet Street, and, we believe, by Messrs. Jonas Brothers, Newgate Street.

J. C. M.—In registering a photograph, it is necessary to fill up a form, supplied at Stationer's Hall for a penny, describing the picture, &c., and then deposit this, with a fee of one shilling, at the Registry Office, Stationer's Hall. If you send half-a-dozen penny stamps to our Publisher he will get you some forms and send you full information. 2. It is better for blinds to roll from eaves to ridge. As a rule, one good white blind will serve, but if you have much sunlight it is sometimes better to have a dark blue one as well.

Cheshire.—Either of the lenses you name, with suitable stop, will cover the plate, but the six inches focus will do it best, and without so much stopping down. 2. For varnishing inside of a wooden bath, a good thick coating of shellac dissolved in methylated spirit or in wood naphtha will answer well.

C. X.—The silver, as a rule, is used in greater proportion than the water, and therefore a bath requires strengthening: of that there is no doubt. The exact ratio in which a bath becomes exhausted cannot be determined by rule, as it depends on the preparation of the albuminized paper. An approximation to a uniform strength may be obtained by adding an ounce of nitrate of silver and sufficient quantity of water to make up the original quantity of solution for every quire of paper excited. If you had quoted the precise article by Mr. Bovey to which you refer, we could have given you a specific answer as to his intention.

X. Y. Z.—The work is not published in English. 2. We only know Carrier's albuminized sensitive paper. 3. We have not seen any photographs of the precise style you describe, but we can readily perceive how, by masking and the use of an embossing press like that employed for diamond cameos, such a result could be produced.

W. H. Barton.—Many thanks.

Edmund.—We have no knowledge of the firm whatever beyond what we published. We received the examples of paper, and, after keeping it for a time, we tried and reported. We regret that we cannot give you further information. The photographs have excited universal admiration.

J. S. Dismoor.—Thanks.

J. G.—Your letter is well meant, but the subject is not of sufficient importance for protracted discussion. Hear what a quaint writer says, in relation to the kind of falsehood you point out: "In a discussion of any kind, the easiest means of gaining a temporary triumph, even for a case which is hopelessly bad, is to misquote your opponent to his damage. By such a step you gain vantage ground, even with the judicious and honourable, until they have found you out—it is estimated by the learned that nearly three-fifths of the adult population who can read and write are not judicious—and a well-told lie always serves its inventor with upwards of half of the community." Thus the quaint writer in some satirical letters on morals. We fancy that some people believe in earnest what the writer quoted said in bitter satire. We have more faith, however, in the prevalence of good sense and good feeling, and should at all times be content with the approval of the "judicious." The case in question is very simple. The person referred to stated that a photograph in which the sun is near the zenith was "described" in a poetical quotation as a sunset. We said that no picture in the series was so "described. Our remark is quoted omitting the word "described," so as to get a point to hang a quibble on. Not one of the pictures of Col. Wortley being *exhibited as sunsets*, criticism of them as sunsets was meaningless. The pitiful attempt to prove that a picture was meant to be a sunset because, in the poem quoted, allusion is made to sunset in another verse which the artist did not quote, does not require comment. With equal propriety it might be insisted that a moonlight scene was intended because a subsequent verse of the same poem speaks of "the moon above it (the castle) standing." From the last paragraph in your letter we conceive that you have not noticed our rule in such matters. We never notice any comment of any kind which refers to ourselves personally, as that gives us no concern. In relation to questions of fact concerning others, when errors or mis-statements come under our notice, we generally correct them.

H. Veal.—The manufacture of soluble cotton requires great precision, and does not admit of much latitude, especially in relation to temperature and strength of acids. If you reduced the strength of the acids as suggested, and also raised the temperature of the acids to 160°, you exceeded instructions, and ran serious risk. It is necessary to use a thermometer the bulb of which can be placed in the acids, and if the acids are of the right strength it is not desirable to allow the temperature to exceed 140°. With some slight qualifications, high temperature and weak acids have similar effects. With strong acids a very high temperature is required: with acids containing much water the temperature may be much lower. With acids too strong and temperature insufficiently high, you get your first result, an explosive but insoluble cotton; with weak acid and high temperature you get an exceedingly soluble and powdery collodion; but you run great risk of all the cotton dissolving in the acids during preparation. You also run risk of all going off in red nitrous fumes, which would, if inhaled, speedily produce death. There is no risk of explosion, but there is of suffocation. Sometimes, too, in this state the acids spurt up, and, if they touch the skin, make serious wounds. A glass bottle is not suitable for the purpose. A strong earthenware jar should be used, and the operation should be performed within a fire-place, or in some place with a draught from the manipulator. When the red fumes appear, the cotton should be vigorously punched down with the spatula, and a little more sulphuric acid added.

Joseph Guyton.—Many thanks.

C. H. Tullett (Sydney).—The specimens enclosed suggest the predominance, in undue proportion, of front top light; but with the obstructed side-light you describe, we do not perceive the means of readily mending the matter. Try stippling half of the skylight at the end furthest from the sitter, and place the sitter a little more under cover of the opaque portion of the roof.

John Foster.—The cards and cabinet portrait received have many very excellent qualities, and, as a whole, show good taste and technical photographic skill. In one or two there is a slight tendency to heaviness from under-exposure of the negative. That is the chief thing to guard against.

The "Picture and the Process," Part II., by Mr. Bovey, and some other Articles, are compelled to stand over from the pressure on our space.

J. G. Tunny.—Too late for this week. In our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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DR. VAN MONCKHOVENS METHOD OF ENLARGING WITH ARTIFICIAL LIGHT.

Dr. Van Monckhoven's demonstration, on Tuesday night, of the excellence of his artificial light, and of the efficiency of his mode of applying it for enlarging purposes, was a very complete success. His description of the light, the theory he is endeavouring to work out in relation to actinic artificial light, and his description of the apparatus and the operations employed, were admirably lucid and complete; but the practical and successful demonstration is the form of argument which carries most conviction, and answers all objections.

As the apparatus and light are very completely described in another column, the description need not be repeated here. Suffice it to say that the light employed on Tuesday night consisted of the oxyhydrogen light with pillars of pure carbonate of magnesia instead of lime cylinders. The result was a light with the chemical intensity of the ordinary magnesium light, without its unsteadiness and irregularity, and at a less cost; or a Drummond light, with a much higher actinic power than that of incandescent lime. The light was intense, concentrated, actinic, steady, and continuous, supplying all the conditions requisite for photographic enlarging operations.

The first demonstration of the practical value of the light consisted in the production of an enlarged negative, on a fifteen inches by twelve plate, from a collodio-chloride transparency, card size. This was effected on a wet collodion film, by an exposure of six seconds, the result being a perfect and well-exposed enlarged negative, with excellent gradation, and sufficient intensity. The second experiment consisted in producing from the same transparency a paper negative on a whole sheet of paper. The paper was prepared with iodide and bromide of potassium, 7½ grains of the former and 2½ grains of the latter in an ounce of water, and floated on a bath containing 35 grains of nitrate of silver and 35 minims of glacial acetic acid in an ounce of water, exposed wet. With an exposure of considerably less than three minutes an excellent negative was obtained on developing with a one-grain solution of pyrogallic acid, containing two grains to the ounce of citric acid. Notwithstanding the difficulties attendant on delicate experiments of this kind in a lecture room, where all the arrangements have to be improvised, the success here was complete.

The theoretic portion of Dr. Monckhoven's remarks are exceedingly interesting, and well worth careful consideration. We shall not dwell now upon the idea—certainly most ingenious and beautiful—that the chemical action of the solar rays is due to the combustion on the sun's surface of certain metallic oxides, formed in a nascent condition at a high temperature. Amongst the metals which are discovered, by means of spectrum analysis, to exist in the photosphere, are magnesium, chromium, and titanium With the actinic character of the first photographers are already familiar, but, as Dr. Monckhoven remarked, many of them would be surprised to learn that chromium possessed a much higher actinic power. If dry hydrogen gas be passed through chloro-chromic acid, oxide of chromium is produced at a very high temperature, and, at the same time, a flame of such intense chemical power that a piece of excited paper held within a few inches darkens in less than a minute—as rapidly, in fact, as in ordinary daylight. Chloride of titanium yields similar results, and Dr. Monckhoven is at present engaged in experiments for utilizing most perfectly the lights thus accessible.

The special aim in using carbonate of magnesium instead of the oxide of the metal is based on a theory which Dr. Monckhoven propounds, to the effect that the actinic value of the light produced is much greater when the oxide is produced in a nascent state by heating a salt such as the chloride or the carbonate. This he demonstrated by showing that so long as the salt was not entirely decomposed, a much more actinic light was obtained than when magnesia, the oxide of the metal, only remained.

As regards economy and steadiness, there can be no question that this form of magnesium light possesses considerable advantage over the burning wire or ribbon. The drawbacks consist in the greater first cost of the apparatus, and in the necessity for using the oxyhydrogen gas. Mr. Solomon observed he wished that the idea of explosion could have been eliminated from the operations. To persons in any degree familiar with the manipulation of these gases, either in use or manufacture, there can be no doubt that the risks are reduced to a minimum, as will be seen on reading the description of the apparatus used. But such risks as arise from ignorance, carelessness, or mismanagement, not always to be avoided, because not always under the control of the principal, must remain; and these will deter some photographers, especially those whose enlarging operations are limited and intermittent, from undertaking the new light. To such we can repeat what we have before said, that the magnesium lamp and ribbon furnishes a simple, safe, and comparatively easily worked artificial light. For all enlarging operations of magnitude, Dr. Van Monckhoven's light and apparatus present a boon of rare value in this variable climate, by making the photographer independent of the sun.

THE ORIGIN OF THE COLLODION PROCESS.

That Le Gray was the first who published any suggestion as to the photographic use of collodion, his suggestion dating as far back as 1819; that Bingham mentioned its use with some degree of success in January 1850; but that Archer published the collodion process, which at once came into use, and, with little modification, continues in use to the present day, are facts which we believe have received general credence amongst photographers; or, at least, such of them as have given any attention to the history of their art. Further, it will scarcely be denied that the honours due to discovery belong, not to him who simply suggests, nor to him who tries and fails, but to him who conceives, proves, and works out to a definite and successful issue. It is this honour, in relation to the collodion process, we claim for Frederick Scott Archer.

Mr. Tunny, in his courteous and ingenious rejoinder to our last, disclaims any especial credit in having worked out a process from the meagre suggestion of Le Gray. To us it seemed that it required a leap of genius to arrive at a practicable process from the not merely meagre and indefinite, but, we might say, incomprehensible suggestions given in the pamphlet published by Willats. Mr. Tunny is willing to undertake the task of producing a negative by the method described by Le Gray, if another gentleman will produce a negative by the method published by Archer in the *Chemist*. This seems a very fair challenge; but if it be carried out we must suggest a very considerable limitation to the licence Mr. Tunny proposes in interpreting Le Gray's formula. He tells us how he will mix fluoride of sodium, bromide of ammonium, ether, spirits of wine, and gun-cotton. But we submit that this mixture, although indefinite as regards quantities, is much more definite than Le Gray's suggestion. He speaks of using "hydrofluoric ether, fluoride of potassium, and soda, dissolved in alcohol at 40°, mixed with sulphuric ether, and afterwards saturated with collodion." This is the mixture with which he speaks of obtaining proofs (not negatives) in five seconds in the shade. He afterwards says: "Ammonia and bromide of potassium give great varieties of promptitude"; but whether he means ammonia or a salt of ammonia, or whether these have to be used in conjunction with the fluorides or in place of them, he does not say. The only approximation to a formula consists in the first quoted sentences. Mr. Tunny must then procure *hydrofluoric* ether, sulphuric ether, alcohol, fluorides of potassium and sodium, and, having dissolved and mixed, he has then to saturate this mixture with collodion. The fluorides mentioned are insoluble in ether, but alcohol dissolves a trace of them. The hydrofluoric ether, not being found in commerce, must be specially prepared. But how will Mr. Tunny proceed to saturate ether with collodion? He informs us that in his experiments he "took the thick collodion of the surgeon, and thinned it with ether and alcohol." We do not doubt for one moment that he did so; but in pursuing a course so distinct from the instructions, we give him credit for a stroke of ingenuity certainly partaking of genius. Diluting collodion with ether is surely the very opposite of saturating ether with collodion, and only an independent act of ingenuity could have substituted one operation for the other.

The next difficulty not got over without inventive ingenuity—and unquestionable form of genius—is the mode of using the collodionized plate, after so modifying the suggestion as to get a plate coated. Following the analogy of the albumen plate, as would be natural, the film would be suffered to dry before immersion in the bath; and following the analogy of the same process, we should have to use, according to Le Gray, a silver bath with something like sixty grains of nitrate of silver to the ounce, and twice that proportion of acetic acid.

That fluoride of silver, when formed, is really soluble in water and aqueous solutions, does not admit of doubt; and that as only a trace of fluoride of the alkaline bases could be contained in the film, very little of the soluble fluoride of silver would remain, is tolerably clear. We do not necessarily affirm that Le Gray tried to palm upon the credulity of mankind an impossibility; we simply say that it seems likely that he gave some indefinite hints of some empirical experiments which he had not really worked into a definite process. That he had not acchieved much success is manifest from the fact that in the preface of the work in which he gave the hints he recommended photographers to stick to paper processes, and repeated the same advice, with additional emphasis, in works he issued two or three years after the collodion process was a popular process of this country. That Mr. Tunny obtained results we attribute to the fact that he worked a process very different to that indicated by Le Gray, a process at which he had arrived, it appears, almost without being conscious of the amount of inventiveness he was exercising. That the mode he adopted, as described in his letters in another column, was modified from that indicated and suggested by Le Gray, we think will be apparent to every one on comparing that indicated in the letter in question, and that indicated in Le Gray's appendix.

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WET PLATES IN THE FIELD.—THE FIXING AND INTENSIFICATION AT HOME.

BY CHARLES ALLAN FERNELEY.

I have this summer taken a considerable number of negatives in less time than formerly, by doing away with the intensification and fixing in the field.

My outfit' mode of working, &c., is as follows:—

Any good bromo-iodized collodion. It works better after having been iodized a few weeks. I have used Thomas's and Huggon's with good results.

Nitrate bath, thirty grains to the ounce, slightly acid with nitric acid. If it works at all foggy, neutralize with carbonate soda, sun it, and filter; add a few drops of nitric acid, and it will work as well as ever.

Developer.—	Sulphate of iron	½ ounce
	Glacial acetic acid ...	½ "
	Water	16 ounces
	Alcohol	*quantam suff.*

The dark tent is one of home make, the same kind as used by Mr. A. Wilson, of Aberdeen. I have had it in use for four years, and like it more and more every day. It takes up no room of itself, but packs up with the stands for camera.

I take the following articles into the field:—Two stands and tent, strapped together (one stand for dark tent); two tin cans, one fitting inside the other, the larger one for clean water, the smaller for waste developing solutions. In the smaller can are placed sixteen ounces bath, sixteen ounces developing solution, four two-ounce bottles collodion, small bottles glacial acetic and nitric acid, spirits wine, and developing glass. To the handle of the larger tin is fastened a small tin jug, for washing plates. The camera, plate-box, gutta-percha bath, plate-drainer, tops of stands, yellow calico, &c., are strapped in focussing cloth. The lens (which is a Grubb's single stereoscopic, six inch focus) I carry in a sling case.

The above outfit is for a day's work with five by four plates. When going out for a few days, I take fifty glasses in grooved box, pint of collodion, with extra chemicals, which are packed in a basket with partitions.

For whole-plates my outfit is slightly altered, with the exception of lenses, of which I take two with me: a No. 1 Dallmeyer's triplet, for architectural subjects, and a Lerebours' single landscape, for foliage, river scenery, &c.

Upon arriving at my destination, I fix my tent in as shady a spot as possible, and free from dust. While the camera is being unpacked, I generally look over the ground, and select the view, which saves a great deal of time during the day, as I know what light is required for each. While the plate is sensitizing, I go and select my subject, always focussing for the foreground, leaving the distance and atmospheric effect to take care of itself. In developing, I take a good dose of developer, and pour on the edge of the plate, and keep it well in motion till I have got as much density as I can. After being well washed in the tent, it is taken in the light again, well washed, and placed on a drainer to dry. The developer must be well washed off, or the negative will be covered with a brown deposit, which would ruin it.

The first operation at home is to varnish the edge of the film one-quarter inch all round, to prevent it slipping. After the varnish is dry, the plate is again wetted, and fixed with cyanide of potassium the usual strength. Wash and dry. The plate is intensified by being wetted, and having poured over it water to which is added tincture of iodine till it becomes the colour of sherry. Well wash, and intensify with silver and pyro. Sometimes it will be necessary to use the iodine and pyro two or three times, till the proper density is obtained. The plate is then ready to be varnished. I have used Fry's varnish this year, and although I always print in the sun, I have never found it become the least tacky.

I always paste on the back of my negatives some tracing-paper, which I find gives additional softness. If the sky is faulty, I paint it over with gamboge two or three times.

Having stated my mode of working in the field, &c., I heartily wish it may be of service to the readers of the Photographic News.

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THE REPRODUCTION OF NEGATIVES BY MEANS OF THE COLLODIO-CHLORIDE PROCESS.

BY DR. D. VAN MONCKHOVEN.*

I have recently been much engaged with the collodio-chloride process, and therefore am enabled to offer several explanations in regard to it, which may be of assistance to photographers desirous of reproducing their negatives. In earlier times I used to believe that it was necessary to over-expose collodio-chloride plates in order to obtain vigorous results, but I soon found out my mistake, and, at the same time, made a discovery, the practical importance of which no one will gainsay.

In collodio-chloride plates, as in iodide of silver plates, solarization is apt to occur when the same are exposed too long to the action of light: the shadows commence to assume the well-known metallic lustre, if viewed by reflected light; or to change to a red tone if seen as a transparency, and gradually all detail in the negative disappears. The light acts, indeed, upon chloride of silver (with an excess of nitrate of silver) exactly in the same way as it does upon iodide of silver under the same conditions; viz., up to a certain point only, beyond which it causes a fading of away the image.

As this phenomenon was quite new to me, I have studied it with much care. A plate coated with collodio chloride and well dried assumes, when exposed to light, a violet tone, and develops a strong smell of chlorine; and if litmus paper is brought into contact with the darkened surface of the plate, it becomes coloured. If a violet plate of this description is interposed in a camera, before a sensitive wet collodion plate, so that all rays of light pass through the collodio-chloride film, it will be found that after a short time the latter changes from violet to red, and thus completely stops the passage of all chemical rays. This red tone subsequently becomes gradually lighter, until a point is reached when the odour of chlorine ceases, and certain physical phenomena become manifest, to which Herschel and Becquerel have already called attention, although, at the time, these gentlemen possessed no accurate knowledge of the molecular composition of the chloride of silver employed.

If, before the above experiment is made, the plate is divided into two parts and exposed to light, one portion being withdrawn as soon as the metallic lustre above mentioned begins to appear, showing the commencement of solarization, while the other is still allowed to be acted upon, it will be observed, on fixing the two halves, that that one is the blackest which was first withdrawn from the light.

I hereupon essayed to prevent this solarization of the collodio-chloride plates—or, at any rate, to delay it—and this I was successful in doing by the employment of ammonia vapour; for I found that if a collodio-chloride plate were cut into halves and exposed to light under a negative, one of them having previously been subjected to ammonia vapour, the difference between them is very marked, one portion soon becoming solarized, while the other yields a vigorous image without any appearance of that phenomenon.

My method of working, based upon the above experiments, is now, therefore, conducted as follows:—

I prepare, in the first instance, four solutions according to the following formulæ:—

A.—Pyroxyline	1 gramme
Ether	40 cubic centimetres
Alcohol	40 „ „

This is allowed to stand for some time, and the clear liquid then decanted for use.

B.—Chloride of magnesium ...	1 gramme
Alcohol at 38° Cent.	10 cub. cents.

dissolved and filtered.

C.—Nitrate of silver, powdered ...	20 grammes
Distilled water	30 cub. cents.
Alcohol	70 „ „

The silver is first dissolved in the water, the alcohol added, and the solution filtered.

D.—Citric acid, powdered... ...	18 grammes
Boiling water...	18 cub. cents.
Alcohol	162 „

The citric acid is first dissolved in the boiling water, then the alcohol is added, and the whole filtered.

In preparing the collodion a brown glass bottle should be employed (one which has been used for hock will do very well) to preserve the liquid from the light. Into this receptacle 600 cub. cents of the normal collodion A, and 50 cub. cents of the magnesium solution B, are poured and well agitated; then 60 cub. cents of the silver solution C are added, the bottle stoppered, and the mixture shaken for several minutes; 40 cub. cents of the citric solution C are afterwards added, and the contents of the bottle again agitated; the same being ready for use after being kept for eight or ten days, it being found to improve by keeping.

I must call attention to the necessity of keeping strictly to the proportions quoted in the above formulæ, as the preparation of collodio-chloride requires accuracy. If too little silver is present the collodion is quite insensitive to light; if too much, it crystallizes out on the surface of the plates. In the former case, nitrate of silver is added; in the latter, chloride of magnesium. The collodion has an opaline colour, and ought to be free from sediment, if rightly prepared.

The plates should be first carefully cleaned, coated with an aqueous solution of albumen (water and albumen in equal parts), and then collodionized. The collodion should be poured upon the plates very slowly, in order that a film of some thickness may be obtained: this is a better mode of proceeding than pouring the solution over a second time, as it generally happens in the latter case, if extraordinary skill is not displayed on the part of the operator, that the second coating partially re-dissolves the first.

Before the plate is exposed, it is first submitted to the influence of ammonia vapour. A little liquid ammonia is poured into a dial glass, and placed in a receptacle at the bottom of a box in which the plate is put; the latter should be about three or four inches above the ammonia, and is subjected to its influence for three minutes, after which it is withdrawn from the box, allowed to remain in the air for half an hour, and then placed in the pressure frame.

Toning is unnecessary, and the plates may therefore be at once fixed and washed.

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* *Phot. Not.*

ON A NEW ARTIFICIAL LIGHT SUITABLE FOR THE PRODUCTION OF PHOTOGRAPHIC ENLARGEMENTS.

BY DR. D. VAN MONCKHOVEN.[*]

It is my intention to divide this communication into three parts: the first portion will relate to the description of a new light, susceptible of employment in the production of enlargements; the second will treat of the nature of the enlarging apparatus; and the third part will include the details of the processes I employ for obtaining my enlarged prints.

I.—Artificial Illumination.

In M. Kirchhoff's analysis of the sun, he has shown that there are burning upon the sun's surface large quantities of calcium, sodium, iron, magnesium, chromium, &c. Whether these metals exist in a free state on the sun's surface, or whether they are in the form of volatile compounds, is a question of little importance: for, as I trust to be able to prove, the presence of a very high temperature—*i.e.*, combustion—would be sufficient to yield not only an extremely dazzling light, but also one possessed of considerable chemical power. These conditions actually exist in the sun, the chemical action of whose rays is due mainly to the presence of chromium, titanium,[†] and magnesium.

I have found by experiment that nearly all the metals of the alkalies and alkaline earths, as likewise many of the metalloids, when burning in oxygen, give rise to a large amount of chemical rays, and I very soon discovered that this fact was due to the production of an oxide at a high temperature, and that the same phenomenon was evident when the same oxides are produced by the decomposition of the metallic salts in a volatilized condition at a very high temperature. As an example of this curious fact, I would cite magnesium, which, on burning, produces oxide of magnesium heated to whiteness by the flame. If we direct the jet of an oxy-hydrogen lamp upon the carbonate or the chloride of magnesium, we produce in either case oxide of magnesium (magnesia) at a high temperature, and, moreover, obtain in both instances flames rich in chemical rays.

This experiment, gentlemen, I will make in your presence, and you will see that so long as the salt is not entirely decomposed, the light is sustained in all its brilliancy; but that when nothing but magnesia remains, the light loses its brightness, and, at the same time, the greater portion of its chemical activity.

If metallic oxides, such as lime, magnesia, alumina, zirconia, are employed, and heated by the oxyhydrogen flame to a very high temperature, the illumination is certainly very brilliant, but experience proves that it is much less photogenic in its character than when the oxide in a nascent condition is produced at a high temperature, as in the case of chlorides, carbonates, &c. In the latter instance the coloured lines of the spectrum inherent to each metal may be observed, but not in the former; and this circumstance induced me to believe that the chemical action of the sun is due to the cause mentioned at the beginning of this communication.

Magnesium is well known to emit an abundance of actinic rays; but I have no doubt I shall astonish my audience by informing them that chromium is possessed of far greater chemical intensity.

If dry hydrogen gas is passed through chloro-chromic acid, and afterwards ignited in a current of oxygen, oxide of chromium is produced at a very high temperature, and at the same time a flame of such extraordinary chemical power, that chloride of silver paper held at a distance of twenty centimetres (eight inches) blackens sensibly in thirty seconds, or about as quickly as in full daylight.

The same experiment may be conducted with equal success with chloride of titanium, which gives a blue flame of extraordinary chemical power.

Unfortunately, these chlorides can be manipulated only by persons well versed in scientific research, as they become decomposed under the influence of moist gases, and the lamp then emits a considerable amount of vapour, as in the case of metallic magnesium.

Among the various other bodies with which I have experimented, I may mention zinc, antimony, cyanogen, and calcium; but none of these can be compared with those to which I have just now referred.

Sodium gives a yellow flame, potassium purple, barium green, and strontium red, as I shall be able to show you by directing the oxyhydrogen flame upon the chlorides of these metals; and you will then observe that as soon as the oxide ceases to be formed from the volatilized chlorides, the light proper ceases, although the oxide is raised to a white heat. These flames, however, although very brilliant, are of a colour and quality which our present developers are unable to bring out; nevertheless, they exert a vigorous action upon the violet chloride of silver.

Magnesium, chromium, and titanium, all of which exist in the sun, are therefore the sources of light most suitable for our purpose.

I am, at the present moment, occupied in establishing the coincidence of the ultra-violet rays of the spectrum with those of these metals, in order to substantiate more fully the theory expressed at the commencement; viz., that the chemical action of the solar rays is due to the formation of metallic oxides at a very high temperature.

Several methods exist by means of which the same phenomenon may be produced in our laboratories. These I will briefly pass in review:—

1. By mixing intimately metallic salts (containing volatile acids) with saltpetre, which gives out oxygen, and with charcoal to produce a high temperature; in this manner the pyrotechnic composition called "Bengal fire" is prepared with arsenic and antimony. It is easy to produce fires of this nature with the salts of magnesium and chromium, which are very suitable for photographic purposes, and I will hereafter indicate a few formulæ for the purpose. But all fires of this description produce too much smoke, and, besides, present a very large volume of flame, rendering them unsuitable for employment in optical apparatus.

2. By burning metal in the form of wire or ribbon, as in the case of magnesium. In this case the flame is of an uncertain and unequal character; and, moreover, a large volume of smoke is emitted. The price of this material is also very costly.

3. By submitting to the action of oxyhydrogen gas such metallic salts as yield oxides and furnish an actinic light.

It is this last method which, after repeated experiments, I have found to be the most practical.

Let us now pass from theory to practice.

II.—The Application of Artificial Lights to Enlarging Apparatus.

Artificial lights to be employed in enlarging apparatus must present but a very small surface, must be of the most brilliant character, devoid of smoke, and constant for a period of at least half an hour.

Attempts have been made to apply electric light batteries from magneto-electric machines to this purpose; but the light afforded, although exceedingly dazzling to the eye, possesses but slight actinic power, a fact which is capable of explanation according to the views I have already given.

The Drummond light, in which a cylinder of quick-lime is submitted to the action of an oxyhydrogen jet, is not suitable for our purpose, as the illumination afforded, although very bright and steady, possesses but small actinic power, and it is necessary, moreover, to mix with the lime a proportion of carbonate, and continually to present a new surface to the gas-jet. It is for the above reasons that apparatus of this description are generally constructed so that the lime cylinder revolves upon its axis.

M. Tessié Mothay substituted compressed magnesia, and more recently zirconia, for the lime; the light thus afforded is steady, but much less actinic than my own.

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[*] Read before the Photographic Society December 14th.

[†] It is only lately that this metal has been discovered in the sun.

Instead of magnesia, Professor Carlevaris, of Genoa, employs little squares of retort-carbon saturated with chloride of magnesium; the Carlevaris light is very actinic, but the chloride is almost immediately decomposed, and nothing remains but heated charcoal, which develops no actinism whatever.

Of the above methods we have selected that of Drummond, substituting for the cylinder of lime one of very pure carbonate of magnesia, free from soda, baryta, and iron, either alone in a very compressed state, or containing titanite of magnesia obtained by a mixture of chloride of titanium and carbonate of magnesia.* The pillars are square at their base, three centimetres in diameter, and eight in height; they burn for an hour and a half, and cost less than half a franc a-piece. They emit a very brilliant and economical light, as I shall presently have the honour to show you.

Instead of pure hydrogen gas, we may use ordinary coal gas, or even alcohol, together with oxygen.

The preparation of the oxygen, if my plan for doing so be adopted, is very easy, and entirely free from danger. I employ for the purpose calcined oxide of manganese; this is the ordinary native black peroxide which has been heated for two hours to whiteness, and which, from its original black, has passed to a brown colour; it is then finely powdered, and passed through a sieve. The chlorate of potash I use is also pulverized and sifted; 600 grammes of brown manganese, and 1200 grammes of chlorate are well mixed by hand in an eathen vessel, and sifted, care being taken not to allow any organic matter to enter, and the whole is then introduced into the wrought-iron retort A (fig. 1).

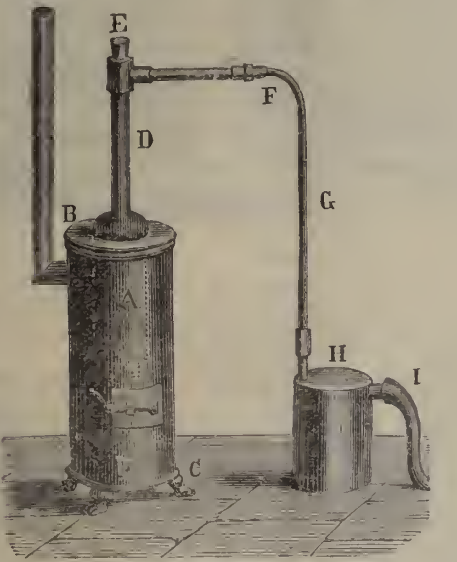

Fig. 1.

The cork stopper E, covered with tinfoil, is put into its place, and the junction F, which places the retort, by means of the leaden pipe G, and rubber-tube I, in communication with the gas-bag A (fig. 6), is adapted.

The delivery-tube (I) should be of at least half an inch internal diameter, and the wash bottle H (fig. 1) must be half filled with water.

A small quantity of ignited charcoal is thrown into the little furnace B, C, or a gas jet may be used, and after the lapse of a few minutes, the india-rubber bag begins to inflate, and in twenty minutes it is full of oxygen; it is necessary during this operation to remove the weights and the pressure boards from the top of the bag.

When the operation is finished and the retort somewhat cooled, the junction F is unscrewed, the cork E taken away, and warm water poured in until the retort A is filled. The water is allowed to remain for an hour, and the contents are then poured into a large jar, where, after the lapse of an hour or so, the oxide of manganese subsides. The clear water is decanted off, and the black deposit put upon a plate near the hearth to dry, after which it is again ready for repeated employment as often as desired.

This operation is quite unattended with danger, if care is taken to employ calcined manganese. With ordinary native manganese a much higher temperature is necessary, the mixture having a tendency to puff up, and the operation becomes dangerous. For this reason it is advisable to use a cork-stopper E, and not a copper one, so that it may act as a safety-valve in case of danger from tumultuous evolution of gas or stoppage of the delivery tubes.

A kilogramme of chloride of potash yields 270 litres of oxygen, and this quantity will supply the lamp for two or three hours; thus the cost of our light, including coal-gas and the magnesia, amounts to two francs per hour, a price very small when compared to the cost of the magnesium light.

The oxygen is collected in an india-rubber bag A capable of holding 350 litres of gas; this bag is fixed between three upright supports (I, C, D), between which, and upon the bag, slides a cover bearing weights to the amount of 75 kilogrammes. When the apparatus is not actually at work, the weights are removed, in order to avoid straining the bag unnecessarily. The oxygen may be preserved in this way for a month, and its production is so simple and certain, that the bag may at any time be refilled in the space of a quarter of an hour.

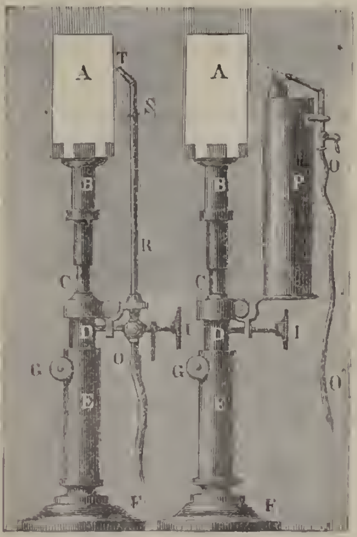

Fig. 2. *Fig.* 3.

The oxyhydrogen burner which I use (shown in figs 2 and 3) is very convenient. Those who have gas laid on in their houses will use the apparatus with two jets of gas (fig. 2); others will find it more expedient to employ the spirit-lamp arrangement (fig. 3). In both figures the same initials refer to similar details: A is the pillar of magnesia fixed upon a stem, B, which may be turned, lowered, or raised upon the rod, C. E F is the stand or support, and G the pinion, by means of which the light is adjusted in the centre of the apparatus. The jets for the two separate gases are formed by two concentric tubes, R, S, T, sliding at S, so that the upper portion of the tube, S T, may be raised when it is desired to heat the top of the magnesia pillar, A. Two gas-cocks, O, P, lead the gases into the apparatus, the letters H and O being marked upon them to distinguish the oxygen supply tube from that of the hydrogen or coal gas. By means of a screw, I, the tube, R, S, T, may be approached to, or removed from, the magnesia pillar. The coal gas does not mix with the oxygen, excepting in the flame itself, so that no danger need be apprehended on the score of explosion.

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* Numerous experiments, made upon a large scale, show that when chloride of magnesium is purified from every trace of soda, baryta, and strontia, and is then precipitated by carbonate of ammonia, and the carbonate of magnesia so obtained dried at 300° Cent., and compressed by hydraulic power, almost the same amount of light is obtained as with a mixture of titanic acid. A compound made up of ten parts of carbonate of magnesia, two of charcoal, one of chloride of titanium, slightly damped, worked in a mortar, and compressed into pillars, gives a light almost twice as brilliant as the one above described, but costs ten times the amount. It is best to employ pillars of carbonate of magnesia; but these are exceedingly difficult of preparation, because it is necessary that they should be free from baryta, soda, and strontia, as, otherwise, a yellowish light is obtained.

The manner of employing the apparatus is exceedingly simple. The tube and stopcock marked H (connected with the supply of coal gas) is first opened, and the gas ignited; the stopcock marked O (in connection with the bag of oxygen) is also opened, and the tube B then raised in such a manner that the top of the pillar, A, is heated by the flame, the extremity of the tube T being brought almost into contact with the magnesia. The heat soon indents the pillar, and it *is only when a cavity has been formed that the light attains its highest degree of brilliancy*; at this stage the stopcock H is partially closed until the maximum amount of light has been secured. In the luminous hollow the most vividly incandescent particles of magnesia are seen, and these lose their brilliancy as soon as they become thoroughly calcined, when other particles are made to replace them. At the end of a quarter or half an-hour the pillar A is raised somewhat, so as to bring a fresh part of its surface into contact with the flame.

The stopcocks should not be opened fully until the maximum amount of light is required. For focussing, the oxygen tap should be opened but very little, and the other regulated accordingly.

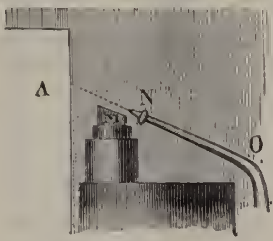

Fig. 4.

The apparatus (fig. 3) is very similar to the other. The lamp, P, is filled with alcohol, the wick being round, and cut obliquely, as in fig. 4, the extremity of the jet, N O, being near enough to the wick to touch it lightly. The wick, M, should be almost in contact with the pillar, A, which is brought about by the screw, I (fig. 3). To this apparatus there is connected but one india-rubber tube, O O′, in communication with the oxygen bag. Fig. 4 shows the exact position that jet N O should occupy in relation to the magnesia pillar.

A certain amount of practice is, of course, necessary in manipulating, especially with the spirit-lamp arrangement; this latter yields a light slightly inferior to the double jet of gas, but, if properly managed, the difference is scarcely appreciable.

As you may observe, gentlemen, the construction of the whole apparatus is of a very simple and solid description; the light is exceedingly steady, and the flame free from all odour and smoke. It has already been burning for half-an-hour without interruption, and you perceive that the bag containing the oxygen has not diminished to any appreciable extent.

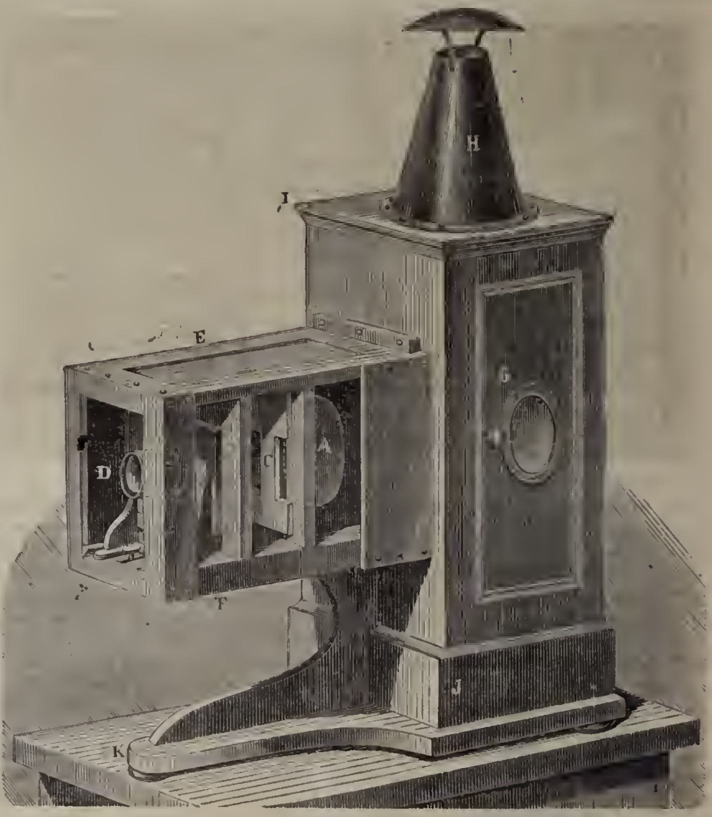

Fig. 5.

I have calculated that from five o'clock in the evening until midnight, a bag of this capacity would be sufficient to feed a large apparatus, provided that the oxygen is turned off when not absolutely required.

I will now proceed to describe the enlarging apparatus, which is shown in fig. 5.

A case of polished oak, I J, surmounted by a chimney, H, with doors at the sides, G, furnished with green glass, contains the lamp. The optical apparatus is contained in the box, E: it is formed of two lenses of very white flint glass, of which one is seen at A. These two lenses condense the light, and transmit it through another lens, D.* Between this latter and the lenses, A, is placed the negative to be enlarged (held in the frame, C). The lenses which condense the light are prepared from very translucent flint glass rather than lenses of crown glass, which latter possess to a considerable degree, the power of absorbing chemical rays emitted at a low temperature, as is here the case. Besides this, it is easy to manufacture flint lenses of very short focus, because its index of refraction is greater.

The artificial light has approximately the diameter of the circle of aberration of the lens. It is necessary that its place in the apparatus be carefully chosen; for the brilliancy of the enlarged image may be varied from simple to triple power. Whether the artificial light is badly adjusted, is easily ascertained by observing if upon the enlarged image there are any blue spots, and if around the field there is a strongly marked circle of red light; if such is the case, the light requires either to be moved forwards or backwards, raised or lowered, until freedom from the defect is secured. The placing of the light in its correct position is soon acquired after a little experience.

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* In apparatus where the lenses, A, are ten inches in diameter, one of them may be removed, and the case, I J, also; then, by adjusting a reflector, it is possible to work by sunlight when the same is procurable.

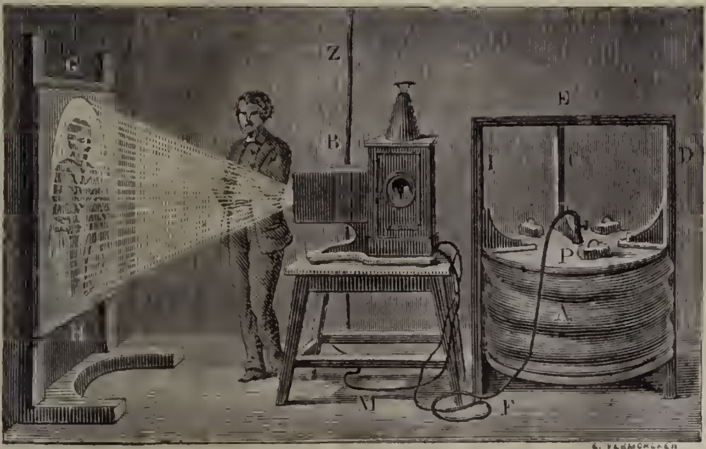

Fig. 6.

As to the operation of focussing and the projection of the image, nothing need be said on my part which is not already well known. Fig. 6 represents the general disposition of the entire apparatus.

I would call your attention to the extreme sharpness of the enlarged image. Here is a carte-de-visite negative representing a monument sharp in every detail; this I will enlarge. It is now of the size of six sheets of paper, and you perceive the image is still perfectly sharp, even to the very edge. This clearness of definition is due not only to the lens, but likewise to the intensity of the light. You will observe also that the margin of the field is red and bright, and has an effect similar to that produced by solar light; this would by no means be the case if the condensing lenses were of crown glass, which give a field of a very green tint.

(*To be continued.*)

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THE SEL ENCAUSSE.

BY DR. SCHNAUSS.*

I have received a bottle of the new toning salt "Sel Encausse," for trial and experiment; the directions for using the same being as follows:—The contents of the bottle ($2\frac{1}{2}$ grammes) is placed in a litre and a half water, and well shaken until the solution is white and frothy. It is ready for use the next day, and will keep good for some time. Before employment it is again shaken, and the required quantity poured into a dish, the prints being immersed, without previous washing, as they come out of the frames, with the free nitrate about them. If the toning action is not sufficiently rapid, the solution is warmed slightly. As the bath does not act upon the prints very vigorously, the latter need be but slightly over-printed: the whites are well preserved, and detail in the shadows becomes developed. The precipitate, after toning, consists almost of pure chloride of silver. The bath may be employed for a second time to give brown tones.

The above are the directions for use; and I may say that, on the whole, the toning is satisfactory. The above quantity of $2\frac{1}{2}$ grammes costs half-a-crown: with us one gramme of double chloride of gold and potassium, or calcium, costs two shillings and threepence, and the same quantity of double chloride of gold and sodium (with an excess of chloride of sodium) one and threepence. Everyone, therefore, will be able to calculate for himself whether any saving is to be effected by the use of this new (?) gold salt. I may state, however, that the white precipitate in the gold bath after employment is not pure chloride of silver, but contains a large quantity of carbonate of lime, as will be seen below.

As regards chemical analysis, the salt is of a light yellow colour, with reddish spots, showing that it is not a homogeneous mass, and that it is a mechanical and not chemical combination. It gives a neutral reaction, dissolves only partially in water, the solution containing, besides chloride of gold, also the chlorides of calcium and potassium. Iron is likewise present, both in the solution and in the insoluble residue, although, possibly, by accident only. The residue is completely dissolved in hydrochloric acid, giving rise to an odourless effervescence, and consists mainly of carbonate of lime. A similar mixture might, therefore, be prepared by rubbing together equal parts of the double chloride of gold and potassium, chloride of calcium, and chalk. Chloride of calcium is deliquescent, and therefore difficult to powder; and for this reason it would be best to dissolve the two first-named salts in water, and to evaporate to dryness, the solution being kept stirred the while with a glass rod, and to rub the chalk in afterwards.

A closer way of imitating the "Sel Encausse" would be to add to a solution of chloride of gold and chloride of calcium so much carbonate of potash as would precipitate nearly the whole of the lime in the form af carbonate, and then to evaporate the mixture to dryness.

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PLEASING PORTRAITS.

BY GEO. H. FENNEMORE.*

A correspondent, writing to me, asks, "What kind of a studio is best suited for taking pleasing portraits, how should it be situated, &c.?"

Good photographs can be made by skilful hands in almost any studio; but to make "pleasing portraits" involves other considerations than those of mere style or form of glass room, without which the most perfect glass room is of little avail.

Let us first consider, then, what is best to be done in order to produce a pleasing portrait. No photographer needs to be told that expression constitutes the chief power and beauty of the human face; and it is equally certain that expression is the result of thought and feeling, either occasional or habitual; therefore the habitual character or mood of a person will determine their average expression, and upon the face will be stamped the soul's predominant workings for a lengthened period. We also see mirrored there, with greater or less vividness, the varying emotions or passions of the moment: such as love or hate, joy or grief; especially if they are recent and intense. And these may for a time obliterate the general or habitual expression of the face. So, too, the ordinary expression of the face may be heightened and intensified by some mental excitement, which calls into action those attributes which have done most to give the face its distinctive cast.

The above remarks, then, lead us to enquire what it is the photographer aims to get while exercising his art? Is it merely to produce an accurate outline of the subject before him?

This, indeed, seems to be the aim of many, but it should not be so. It is true that these things are necessary to a perfect portrait, but they are insufficient, and in many cases next to worthless, if the one great thing, expression, is wanting—that indefinable something which reveals to us the soul within, and stamps man with that individuality which distinguishes him from all others. If we cannot secure this, we lack one of the main attributes of the true artist, and the result will be simply a picture, but seldom, if ever, a pleasing portrait.

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* *Photographisches Archiv.*

* *Philadelphia Photographer.*

The photographer, in his endeavour to get a truthful picture, always encounters one great difficulty. The immovable and very often constrained position of the sitter, has a tendency to render the expression of the face dull and unnatural, and seldom having that genial expression of which the face is susceptible. It is of great importance, then, that, at the time of sitting, some means should be adopted (either by conversation or otherwise) to bring into the sitter's face the noblest and best expression of which it is capable. This is best done by acting on the mind of the sitter, by entering into conversation of a genial and refined nature, at the same time that you are giving an easy and graceful pose to the figure. Make him talk as much as possible on pleasant subjects, in order to watch the play of expression on the countenance. Avoid handling the subject as much as possible, and make the head-rest as little obnoxious as possible. This should be done quietly and quickly, without allowing the conversation to lag. Let the object you wish him to look at be some distance off, and let it be something that will call forth admiration.

These little attentions, coupled with the feeling that you show a real desire to succeed, will naturally give a pleasant cast to the countenance. This once obtained, expose your plate, and the chances are that you have succeeded in pleasing youself as well as your subject, by producing a pleasing portrait."

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COMETS.

BY JOHN C. BROWNE.*

I know of nothing more vexatious, in all the chapter of failures to which the photographer is liable, than to be pursued by comets; not small insignificant ones, such as are often met with in ordinary experience, but comets with long fiery tails, darting about in all directions over the negative, and effectually spoiling it.

During a recent visit to the Delaware Water-Gap, I became acquainted with what was to me a new variety of celestial visitor, which, from its peculiar appearance, I shall designate as the T-shaped comet, and note its appearance in October, 1869.

My chemicals were in as perfect a condition as it was possible to make them, and I fondly hoped for a number of good negatives, as a remembrance of the fine views in the neighbourhood. But the first plate dipped showed, upon development, the presence of these disagreeable markings. Plate after plate was exposed and developed with the same result; but the difficulty increased so rapidly that I was fairly driven from the field a victim to comets. My apparatus was packed up, and with much reluctance I gave up the day as lost, and returned to the hotel. After much thought upon the subject, I filtered and tested the silver solutions, washed out the dipping bath, made new collodion, and trusted to better luck next day. But, sad to relate, my experience was less successful than the first day, and I returned again without a single good negative.

I dreamed of comets that night, and awoke next morning determined to find out the cause, if possible. Aided by Mr. Jesse A. Graves, who kindly allowed me the use of his dark room and the many conveniences therein contained, we together examined all my chemicals and apparatus carefully. The chemicals were found in perfect condition, but, after many experiments, the trouble was proved to be in the dipping-bath, which was of hard rubber, seven by nine, having a water-tight cover. Although I had used this bath for about four years, probably not more than seventy-five plates had been dipped in it during that time, and they at long intervals. Now I am satisfied that the cause of all my trouble was occasioned by the corners of the glass plate touching the sides of the dipping-bath, and rubbing off some particles of bromo-iodide of silver which had collected there. Often, when working in the field, I have, to save time in sensitizing, moved the plate by raising and lowering the dipper, thereby hastening the time of immersion. Although this is done very gently, so that very little scraping occurs, still it is impossible, in the constrained position of kneeling upon the ground, not to touch the sides occasionally.

In using hard rubber baths, it has always been my practice never to allow the silver solution to remain in it over night. The bath-holder being thoroughly washed in running water for some minutes after the silver solution had been poured out, it was then allowed to remain full of pure water until used the next time, in each case draining off all the water before pouring back the silver solution. Before taking this bath into the field, I had carefully cleaned it with a piece of sponge tied to a stick, and drained it well before using. The silver solution was carried in a large glass bottle. To support my assertion that the trouble was occasioned by the dipping-bath, I would say that after the same bath had been well washed, and the silver solution poured into it, a plate was dipped, and allowed to remain perfectly quiet until coated; upon development, one single comet was noticed. By observing the same rule in dipping the plate carefully, and letting it rest until ready to put in the holder, I am glad to say that not a single comet troubled me during the rest of the expedition.

From my first experience in photography, ten years ago, I have used hard rubber dipping baths for landscape work, as they take up less room in packing, and are lighter to carry, and have never before had cause to doubt their reliability, provided the silver solution was not permitted to remain in contact any length of time. But my recent comet-seeking experience has opened my eyes to the fact that they are not to be depended upon, and I ask photographers to take warning, lest they suffer from the same cause.

For the future, all of my dipping-baths shall be made of gutta-percha, or glass inclosed in a wooden case with a water-tight cover, arranged so that the top may swing back at any angle required.

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Correspondence.

THE ORIGIN OF THE COLLODION PROCESS.

Sir,—Allow me to thank you for the great courtesy you have displayed towards me in your criticisms of my letter written in defence of Le Gray's right to the priority of publication of the collodion process.

If it had not been for one or two passages that might be interpreted into a meaning that, perhaps, you did not intend, I would have allowed the consecutive documentary evidence that I adduced in defence of Le Gray's claim as a sufficient bulwark to withstand the missiles of any one who may try to dislodge him.

In the first place, I would like to at once disclaim any desire or right in any shape, form, or meaning, to have any merit in the discovery of the collodion process. I took the materials Le Gray enumerated, and if I did not succeed at once I in no way attributed my want of success to any imperfection in the process, but to my ignorance of the new materials I was called on to employ. The meagreness that I spoke of was in the want of the precise quantities of each of the ingredients. It no doubt required a little experimenting to satisfy ones-self of the best proportions, but it in no way required "a leap of genius" to solve the difficulties. I certainly gave a different interpretation to Le Gray's instructions to what you do: I did not interpret it as the "saturating an ether and alcohol with collodiodion" to mean "adding soluble sotton until it produced a thick jelly." I could not make the mistake that collodion meant gun-cotton.] I took the thick collodion of the surgeon, and thinned it with ether and alcohol, as instructed. I added a small quantity of the fluoride of soda and a little of the bromide of ammonia; after the mixture was well shaken, I coated a plate, and dipped it in a nitrate of silver bath of about the strength I was in the habit of using for dipping my albuminized plates, exposed it, and developed with protosulphate of iron. Very likely the collodion, the first time, might be too thick, and would make a very imperfect coating; but it required no great genius to thin it with a little more ether and alcohol. The fluoride and bromide would be tried in various proportions. This was no uncommon thing to do with the various processes I had been in the habit of working, so that you will see the great mountain of difficulties you pile up were much easier got over than you seem to think.

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* *Philadelphia Photographer.*

But your next objection is a more formidable one, if it was founded on fact. You say "the haloid salt described is a fluoride, and fluoride of silver would be formed; but as this, unlike the iodide, bromide, and chloride, is soluble in aqueous solutions, it would be partially, if not entirely, dissolved out of the film as quickly as it was formed, so that very little of the sensitive salt would remain on the plate when it was exposed to the light."

If this is correct, Le Gray tried to palm upon the credulity of ignorance an impossibility; and how humiliated I must feel to think that I have been supposed capable of buttressing up this fraud! The whole question is now out of the arena of history, and within the domain of experimental demonstration. Before this all-important point is settled, all minor questions involved in it is of little moment, and in the experimental test I am about to propose, the relative merits of Mr. Archer's formula of his process as published in the *Chemist*, and that of Le Gray as published in his treatise of 1850, will be at the same time demonstrated. Then I propose that a committee of any of the societies should be chosen to select a gentleman who will conduct the experiment in accordance with the instruction of Mr. Archer as published in the *Chemist*. Let the collodion be made according to the pharmacopeia of 1850, and the other instructions to be as literally attended to, and I will be prepared to give as fair a trial to Le Gray's instructions. In order to make the trial as fair as I can conceive, I shall produce a small bottle of fluoride of soda, another of bromide of ammonia, one with a little ether, and another with a small quantity of spirit of wine. Into an empty bottle I shall put a pinch of bromide of ammonia and another of the fluoride o soda. I shall then add a small quantity of spirit of wine and ether, and a tuft of gun-cotton. When the ingredients are dissolved, I shall be prepared to coat a glass plate, dip it in a nitrate of silver bath of a strength of from thirty to forty-five grains, and take a picture in a third less time with this rule-of-thumb made collodion; or, with scales and weights, I shall, with the above ingredients, take a picture in half the time required by the gentleman who shall work the formula of Mr. Archer. By the above test, both the comparative sensitiveness of the two processes, and the supposed solubility of the fluoride of silver, will be tested.

Some other little matters I might have referred to; but I have thought it better to confine myself to this one question in the present communication. J. G. Tunny.

Sir,—So much has been written, *pro et con.*, with regard to Mr. F. S. Archer's claim to the invention of the collodion process, that I almost hesitate to contribute my mite to the controversy. However, Mr. M'Craw's letter, in your impression of to-day, affords me the opportunity of fixing one date which may happen to be material. I am and was a miniature painter. During the year of our first International Exhibition my profession was carried on at 253, Strand, where, in the very first or second week of the month of May (well marked through several circumstances), a paper photograph—that of a bust—was brought me to colour, and, by the addition of necktie, coat, and waistcoat, to render as much like a "miniature from the life" as possible.

This picture was taken by Mr. F. S. Archer, and by the waxed paper process from a bust of his own modelling. It excited my curiosity so much that I called on Mr. Archer, showing my work, and found him busy at photography in his studio at the back of his house in Great Russell Street, Bloomsbury, where he explained to me the difficulty he had in keeping paper flatly attached to a glass in a dipping bath. In the course of conversation he told me that he contemplated a mode of *rendering paper into a liquid, so that it might be poured upon the glass.*

Shortly after this, a severe domestic affliction caused me to leave London, and it was not till more than twelve months afterwards that, having adopted photography as my profession, and purchased my first chemicals of Mr. Hocking, I called on Mr. Archer to offer my services in colouring his photographs. I then asked him, "What is collodion?" and his reply was, "Exactly that which I told you of before, a sort of liquid paper." *And so it is.*

Now, sir, I have neither time nor documents whereby to collect dates; but of this one especial date I am quite certain, namely, that my colouring of the picture in question was no later than the second week of the Exhibition of 1851, and that my conversation with Mr. Archer was about four or five days later only.

How soon afterwards it may have been that Mr. Archer actually *made* his liquid paper, or collodion, must be established through other evidence than mine.—I have the honour to be yours, &c., C. S. Herve.

Flagstaff Villa, Aldershot, December 11.

[As Mr. Archer had published in the *Chemist* his details of the collodion process at a date two months earlier than that our correspondent mentions, it would appear that being more familiar with the wax-paper process, Mr. Archer still practised it after he had worked collodion some time. This would seem to corroborate the statement we have already made, that, in the early days of collodion, Mr. Archer was not very successful in operating with it. We have in our possession, however, as we have said, a negative taken by Dr. Diamond with collodion Mr. Archer had prepared in September 1850.—Ed.]

MR. W. M'CRAW ON THE ORIGIN OF THE COLLODION PROCESS.

Sir,—I was forced, on a former occasion, to convict your correspondent of knowingly and wilfully writing that which he knew to be untrue; and, as only these untruths are again paraded, mixed with as much spite and bitterness of feeling as he could exhibit, I respectfully decline to hold any correspondence with him. J. G. Tunny.

WHEN TO PHOTOGRAPH GULLS.—ILLEGITIMATE CRITICISM.

Sir,—So much has appeared, from time to time, in your pages in connection with the broken negative of the gulls, that I am unwilling to add my say in the matter, were it not to deliver the controversy from the very ridiculous and absurd phases in which it has been exhibited.

Few persons have had the agreeable opportunity of watching these birds when they have disported so vigorously on their wing amidst storm and tempest that I have. The mackerel, the herring, and sprat schools are always attended by them in large numbers; and the commencement of the sprat season of the last week or two has not been an exception. I believe I have watched the habits of these birds of the wave and storm, and I can find full evidence that those who are fully acquainted with the resources of the photographic art can represent, under favourable circumstances, the flock of gulls without resorting to trick or fraud, to produce the most truthful effects.

Permit me, now, if I may occupy your space, to deprecate the kind of criticism to which the finest productions of the sun-painter are so often subjected. His productions are too often spoken of as if photography by itself, even in the hands of those who have a feeling for the beautiful in art, combined with a knowledge of manipulating power to develop it, could not express the truthful without resorting to tricks and dodges in the production of artistic effects. Such unfair assumptions would not be tolerated in kindred arts. It could be scarcely said of the glorious production of the painter's easel that they were produced by trick and dodge, because the finger had spread the minute scumble which gave atmosphere to the blue distance, or because a palette-knife had spread the sky with a feeling of clearness and beauty that no brush could rival, or that a few minute points of intense positive colour should be squeezed from the tube to give brilliancy to the picture. Such helps as these, and many others, would not be thought illegitimate; and why should not, therefore, the artist photographer use all the resources which his feeling and experience provide to produce his effects? His productions should be weighed by their results, and not by their mannerism.

If this proposition be truthful, some of our best photographers have much to complain of, not from the outside public, but from their own fraternity, who too often indicate this suicidal style of criticism. Do those who thus criticize imagine for one moment that they elevate the art they practise, or degrade it? Do these not, by constantly prying into little methods and processes, do injustice to the art and artists? If any one, by artistic perception, realized opportunity, and great manipulative power, has produced a picture, or class of picture, unique in poetry and artistic power, let the credit of the creation rest with him alone. Let the speciality rest with the artist, and, if he be rivalled, let it be not by attempting miserable imitations, but by something of equal originality and artistic merit.

There is plenty of field in grand old nature for the photographer and artist, without his being a servile imitator. What say some of our friends, who wish to create a sensation, to the wild fowl, their decoys and haunts in Lincolnshire, Norfolk, and Essex? That world is not exhausted yet, and originality and novelty may be found in many a field, and would provide a firmer step for public estimation than imitation, however successful. No Name.

SAFETY OF ARTIFICIAL LIGHTS.

Dear Sir,—Last night I was quite unexpectedly called on to give my opinion on the light shown by Dr. Monckhoven. What I meant to express was the safety of magnesium against any other of the artificial strong lights; and that such gentlemen as Dr. Monckhoven would confer a great gift if they would endeavour to produce any compound, not explosive, and requiring the aid only of a spirit of wine lamp or common gas, to produce a brilliant actinic light.—Yours obediently,

London, November 13th, 1869. J. Solomon.

Proceedings of Societies.

Photographic Society of London.

The usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, December 14th, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Messrs. A. Lewis, W H. Stillman. F. G. Lloyd, F. Downer, J. M. Burgess, R. Potter, F. Beasley, jun., J. C. Stoddart, R. Leigh, R. Slingsby, E. Hyde, W. Brookes, Dr. Scott.

The Chairman read the seventh rule, and mentioned the retiring officers and those nominated for election.

The Secretary then proceeded to read Dr. Van Monckhoven's paper on a new artificial light and its employment for enlarging purposes (see p. 602).

Dr. Van Monckhoven exhibited several fine specimens of enlargement by this light, a complete set of the apparatus was shown, and some admirably successful demonstrations were given by Dr. Monckhoven (see leader).

Mr. Solomon, in response to the Chairman, said he had no remarks to make beyond expressing a wish that the word explosion could have been eliminated from the possibilities of the process. With a risk of that kind, he thought that the extra cost of magnesium wire was scarcely a consideration.

The Chairman thought that as an explosion must attack the weakest part, the precaution of Dr. Monckhoven, in providing an outlet by the mere expulsion of a cork, was a perfect safeguard.

A conversation on the subject followed, in which a general opinion was expressed to the effect that Dr. Monckhoven's provisions against explosion were efficient.

The Secretary referred to former experiments in obtaining a fine light by means of chromium.

Mr. Hughes pointed out that the especial value of Dr. Monckhoven's plan consisted in the fact that he had combined the steadiness and continuity of the ordinary oxyhydrogen light with the actinic qualities of magnesium light.

Mr. Mayall expressed a conviction that, excellent as were the results already obtained, Dr. Monckhoven would do still more when he had perfected his means of employing titanium in conjunction with the magnesium.

Mr. Dallmeyer said, that the plan of substituting a salt of the metal for the metal itself, and so securing steadiness and continuance of the light, was of vast practical importance. The light with chromium and titanium was yet in an experimental state, and he should look with much interest for the issue.

The Chairman, in proposing a vote of thanks, said he had witnessed the demonstrations with peculiar interest. It was just thirty-five years since he was present when Lieutenant Drummond first exhibited his lime light in the town of Newcastle-on-Tyne, and the comparison of the light to-night with that then exhibited was fully suggestive as to the progress made. He had been especially pleased with the ingenious arrangements for preventing an explosion, both in the manufacture of the gas, and in the keeping the gases separate until the point of ignition, the burner possessing most ingenious arrangements.

The Chairman announced a paper on the "Magic Lantern and Photography," by Mr. Highley, at the January meeting, and a paper by Mr. Dunmore on a new method of combination printing. The presentation print given by Mr. Mayall would also be ready, and new members joining would have the privilege of receiving it.

Dr. Van Monckhoven having briefly expressed his acknowledgments of the vote of thanks, and a hope to meet the Society again, the proceedings terminated.

South London Photographic Society.

The usual monthly meeting was held in the City of London College, Mr. Sebastian Davis in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Mr. Stanfield, Mr. Dunmore, and Mr. G. Trucker.

The December meeting being henceforth to be the annual meeting, the financial statement postponed from June was now read, and showed a balance in hand of £2 19s. 3d.

The Chairman stated that the amount of 20 per cent., allowed by the rules to enable the Hon. Secretary to obtain assistance, was now and had been since his first year in office declined by Mr. Cocking, who insisted on the performance of his duties without aid or reward.

After votes of thanks to the Secretary and Treasurer, and due acknowledgments,

The Secretary read the following letter:—

"Tunbridge Wells, Dec. 8, 1869.

"My dear Sir,—When I saw you at the opening meeting of the Photographic Society, I promised to send you a piece of the negative of the 'Seagulls,' about which there has been so much controversy. On returning home I found that the remains of the negative had been thrown away. However, I was able to rescue a small fragment, which I send with this. It fortunately happens that this piece is from the most important part of the negative, and, although an inquiring assistant has scratched away some of the gulls with a knife (in order to discover what they are made of, I suppose) there are still sufficient remaining, both large and small, to suggest to those who have so confidently asserted that it was a combination picture, that it was just possible they were mistaken. I do not know if any of them will have the grace to acknowledge this, neither do I greatly care; but there is one thing that I do regret, which is, that I shall not be able to describe and explain a process which may have been of some use to my photographic brethren. It has been so persistently suggested that I have used some unlawful, almost criminal, dodge (people are so apt to think that anything they do not understand is supernatural or wicked), that I prefer to allow my critics to enjoy the blissful ignorance of their own opinions. It must be borne in mind that I have carefully abstained, in all I have written or said on the subject, from misleading any one. I have simply refrained from saying whether it was or was not direct from nature. When I first exhibited the picture I intended to describe the method by which it was produced, but I have, metaphorically, been driven into a corner, and there I intend to remain.

"There is one curious effect in the picture which I think ought to be pointed out, as it will remove an objection to the birds being gulls, which has attracted the attention of one or two naturalists. The body of a kittiwake gull is quite white, (except in the young birds, which are of various shades of grey), especially in the spring, when the picture was produced, and the ends of the wings are black. It happens that these black tips do not 'come out' against the sea, which makes the wings look short and blunt instead of pointed at the end.—Yours very truly, "H. P. Robinson.

"E. Cocking, Esq."

The fragment of the gull negative was then exhibited to the members, and a conversation thereon followed.

Mr. Dunmore suggested that if a plate of glass were coated with an opaque film of some kind, the images of gulls might be formed by scratching out in the shadows, and by painting lights on the glass; the sea negative being then taken, might be covered with the negative made as he had described, exposed for a moment to the light, and then all developed together.

Mr. Baynham Jones could not see any good reason why the picture might not be taken from nature.

Mr. Hart was surprised that after all the ingenious suggestions to which the picture had given rise, no examples produced by the methods suggested had been shown.

Mr. B. Jones then exhibited some very fine cabinet portraits with natural foregrounds and backgrounds, after the manner of Mr. Edge. These were much admired.

Mr. Fitch exhibited some collodio-chloride prints on opal glass which had been kept without protection of any kind for about five years, and without any change or fading.

Mr. Sandford exhibited some very fine examples of portraiture by Mr. Chancellor, of Dublin.

After votes of thanks to the gentlemen who had exhibited specimens,

The Chairman said, that according to arrangement, this meeting would be devoted to conversation or discussion in relation to the late exhibition and its lessons. It had occurred to him that the greatest evidences of advancement in the art had consisted in the manifest presence of purpose, and expressions of sentiment or thought, in the mass of the pictures, especially in portraiture, in many cases the true suggestion of the inner man, as well as good technical photography, and good mechanical portraiture.

Mr. Hart said he had recently had opportunity of examining the photography, especially the portraiture, in several continental cities, and had arrived home just in time to see the English photography at the late Exhibition. He had seen exhibitions in Belgium, Hanover, and Prussia; but he was surprised and rejoiced at the incomparable superiority of the pictures exhibited in Conduit Street. He had, of course, seen a few fine things abroad, but they were chiefly head and bust only, and all very completely retouched. He believed that the exhibition in Berlin of Mr. Blanchard's pictures shown in Conduit Street would revolutionize photography at Berlin quite as thoroughly as had the Exhibition of M. Salomon's portraits revolutionized portraiture in this country. The atmospheric conditions were much more favourable in Berlin than here for photography. Their studios were excellent. Dr. Vogel's studio, which was the model of most of them in Berlin, was a magnificent place, very large, with excellent light, and a very complete system of blinds, by which any degree of light or shade could be secured. He had been much struck with a series of portraits Dr. Vogel taken, in which he illustrated that by the use of suitable or unsuitable lenses, plain persons could be made comparatively pleasing, and pretty faces plain.

Mr. Blanchard, speaking in relation to styles of portraiture, said photographers were too apt to get into grooves. At one time the smooth, clean, light grey background was in vogue, and if a face had much gradation or modelling, the public were apt to exclaim that it looked dirty. It had to be made chalkily white to get rid of that effect. A darker background, especially for large pictures, manifestly did greater justice to flesh. But to obtain a satisfactory effect, it was imperative to have gradation of light and shade in the background to give the effect of space.

After some further conversation on the subject, in the course of which Mr. Blanchard remarked that in some of his exhibited pictures the sitter was placed fifteen feet from the background, the subject dropped.

The Secretary reminded members that the annual dinner would take place on Saturday next, at the Cafe Royal, in Regent Street, and he would be glad if members intending to be present would let him know as early as possible, that arrangements might be satisfactorily made.

The proceedings then terminated.'

Manchester Photographic Society.

The usual monthly meeting of this Society was held at the Memorial Hall on Thursday evening, the 2nd inst., M. Noton, Esq., V.P., in the chair.

The minutes of the November meeting were read and confirmed, and the following resolutions, recommended by the Council, were agreed to:—

1st. That a soirée and exhibition be held during the present session.

2nd. That the exhibition be opened two days; namely, on the 28th February and 1st March; and that the lantern exhibition take place on the evening of the 1st March, power being given to the *soirée* committee to change these dates if necessary.

3rd. That the members of the Council shall manage the *soirée*, and shall have power to add to their number.

4th. That the sum of £25 be placed at the disposal of the Council to defray the necessary expenses.

5th. That an art union be held in connection with the exhibition.

Mr Holding originated a long discussion by asking why the works of members of the Society were inadmissible as Art Union prizes.

After a tolerably free ventilation of the question, the Secretary read the following resolution, passed on the 9th January, 1869:—

"That with a view to encourage the loan of photographic works of art for exhibition at the annual *soirée*, there be an art union held in connection therewith, and that the prizes be selected from the pictures of the various contributors who are *not* members of the Society."

It was ultimately decided to adhere to this resolution.

Mr. Sanderson made a few remarks on Durand's sensitive paper. He had accidentally left some pieces in the printing frames quite six weeks, and, at the end of that time, toned them. The resulting prints were about equal in quality to such as would be obtained on ordinary silver paper two days old.

Mr. Hutchison said he usually toned Durand's paper in the acetate of soda and gold bath, and found the results highly satisfactory. He always made his toning bath moderately quick of action.

Mr. Sanderson, who exhibited two negatives—one full of pinholes, and the other quite free from them—said he wished to recall to the remembrance of the members a statement made at the September meeting, to the effect that if collodio-albumen plates were inclined to develop pinholes, the fault could be effectually prevented by gently rubbing them with cotton wool immediately *before development*. The plan then pointed out was not quite correct. The plates should be gently rubbed with cotton wool when washing *after the second sensitizing*. The defective condition alluded to arose from the bath being overcharged with iodide of silver, and a plate from such a bath, after being washed and drained for a short time, had a rough and sanded appearance on the surface. A very slight application of the cotton wool would be found sufficient to cure the evil, as would be seen from a comparison of the two plates on the table.

Mr. Atherton said the same effect would arise in working wet collodion with an old or overcharged bath.

Mr. Coote showed a few negatives that were marked in a very curious manner, and for which no satisfactory reason could be given.

A vote of thanks to Mr. Sanderson and the Chairman closed the proceedings.

Chas. Adin, *Hon. Secretary*.

Talk in the Studio.

Mr. Davenport's Lecture on Prints and their Production.—It will interest our readers to learn that Mr. Davenport's exceedingly fine collection of prints by various processes, illustrative of his recent lecture, still remains on view at the rooms of the Society of Arts, John Street, Adelphi. Besides examples of various forms of mechanical printing, the collection of specimens of photographic process is of rare completeness and excellence. Besides combination and other pictorial photographs by Rejlander, Robinson, Blanchard, and others, there are carbon prints by Swan's, Johnson's, and Pouncy's processes, photo-block prints, or "Dallas-types" by Mr. Dallas; Woodbury's photo-relief prints; photo-lithographs by Griggs, Bullock, Ramage, and others; photo-collographs by Tessie du Motay and Albert; photo-galvanographs by Protsch, and examples of other interesting processes. As we desire to produce Mr. Davenport's excellent paper in its entirety, we are compelled for the present to defer it.

Assault on a Photographer.—An action for assault and slander was brought by Mr. Hunt against Mr. Burgess in the Court of Exchequer on Monday. The plaintiff was a photographer, carrying on business in Piccadilly, and the defendant was the manager of the company known as the Christy Minstrels, whose performances take place at St. James's Hall. For several years the plaintiff had been in the habit of producing photographic sketches of different members of the company in character, and had what is called a "face" admission to the performances—*id est*, he was at all times allowed to enter the hall on presenting himself in *propria persona*. On Wednesday, the 6th of October, he had occasion to go for the purpose of seeing Mr. Moore, one of the *artistes*, about a photograph which he had taken of his daughter in the attitude described by counsel as the "Grecian bend," a *pose* caused by the high-heeled shoes which now constitute a prominent feature in ladies' attire. The plaintiff wanted instructions as to the colours to be employed in tinting the young lady's costume. The check-taker allowed him to pass without payment, as usual; and after he had had some conversation with Mr. Moore, the defendant came up in an excited state, and, employing some unamiable epithets, called him a thief and a loafer, saying that he had robbed him of 3s., which was the price of admission. Afterwards he seized the plaintiff round the neck, and "put his head in Chancery," nearly throttling him, and making his face almost as black as that of a Christy Minstrel. He was very unwell after the assault, and had to seek the advice of a medical man. He said that he had not yet entirely recovered from the injuries, and that in consequence of them he could not attend to his business as regularly as before, and he calculated he had lost forty pounds on that account. In examination, the plaintiff said, owing to his illness he had refused work, including some commissions from Mr. Millais. Mr. Millais wanted him to take a camera to his house and copy two pictures; and he wrote to him to say that he was too unwell to undertake the work. This might be a hundred pounds out of his pocket. His charge to Mr. Millais would have been three guineas, but he might have had to produce many photographic copies of the picture. The Lord Chief Baron, in summing up, complained of the public time being wasted by such actions. The jury awarded the plaintiff a farthing damages.

Piracies.—The *Stationer* has the following:—"Caution.—The retail trade will do well to be upon their guard, as copies of a number of copyright cartes-de-visite are now being offered for sale. The Stereoscopic Company, Messrs. Hills and Saunders, and Mr. Downe, of Newcastle, have been sufferers, and have within the last few days made some very respectable dealers give up their stock, and pay a royalty upon the quantities sold."

To Correspondents.

M. A. C.—A variety of substitutes for ground glass are used for backing stereoscopic transparencies. Starch applied hot dries in a semi-opaque film, which answers pretty well. Spirit varnish to which a little wax has been added, applied without heat, gives a pretty good effect, as does also benzole varnish, with a little wax added. Gelatine, with oxide of zinc in suspension, gives a result similar to opal glass, which is very pretty.

D. B. Evans.—You are in error, we think, in supposing that our correspondent "Moderator" has been using a lean-to studio, and not one with a direct front light. It is a direct front light which he has abandoned. We shall have pleasure in giving publicity to reasons for either mode of lighting. Our own judgment is in favour of a north high side-light, of course in greater or less degree in advance of the sitter. This mode of lighting involves the least trouble, and gives the best results we meet with. If a direct front-light be employed, it must be large, and have a complete system of blinds, so that it may be practically converted into a high side-light.

An Amateur (Manchester).—Mr. Hubbard's address is No. 1, Oxford Street; that of Mr. Twyman, Ramsgate; that of Mr. Crawshay, Cyfarthfa Castle, Merthyr Tydvil; that of Mr. Alfieri, Hanley, Staffordshire.

W. W.—Amongst the advantages of nitrate of ammonia in the printing bath, its hygroscopic property, preventing too complete desiccation of the paper, may doubtless be reckoned. You will run some slight risk of having the paper too dry, however, notwithstanding its presence, if you hang the sensitized sheets too near the hot pipes. The formula you propose will answer, and, when once mixed, the density of the solution will remain the same throughout, and, of course, the same strength. It is only when in use in a dish that the silver, being extracted by the chloride from the upper stratum of the solution, causes it to become weaker than the lower strata. A very little agitation diffuses the silver salt equally, and restores the equilibrium. To replenish, add one ounce of nitrate of silver and sufficient of a thirty-grain solution of nitrate of ammonia to restore the original bulk, for each quire of paper excited. Mr. Wilson's plan of quantitative analysis will enable you to ascertain the strength in silver of the solution. The nitrate of ammonia will simply be removed in the same proportion as the water. 2. Hyposulphite of soda will gradually penetrate most varnishes, but a strong shellac varnish will answer pretty well. 3. A high side-light is desirable, as giving the best effect of lighting to the head; the lower portion of the side-light illuminates the lower part of the figure, and also to prevent the shadows under projecting features, &c., from being too heavy. We should have the light to about thirty or thirty-six inches from the ground. We have pleasure in answering your question. Do not scruple to ask any advice we can give you.

E. R.—You will find many articles in the various volumes of the News and Year-Book on reducing chloride of silver, and it is impossible to give full instructions in this column. It is necessary to have the chloride quite clean and dry, and mix it intimately with a mixture of carbonate of potash and carbonate of soda. You may use the three in equal proportions. These are placed in a crucible and submitted to a white heat for about twenty minutes, when the silver will be separated, and will be found in a metallic button at the bottom of the crucible. You will find other processes described in various of our Year-Books, especially 1866 and 1867.

J. C. (Bradford).—There are two photographic journals in France: one published fortnightly, *Le Moniteur de la Photographie*, address, 12, *Quai de Bethune, Paris*; the other monthly, *Bulletin de la Societe Francais de Photographie*, address, 35, *Quai des Grands Augustins, Paris.*

John St. John.—You will find particulars in "Muspratt's Chemistry."

R. H. P.—We had not noticed such a fact as you mention, which is very interesting, and bears intimately on the question of acceleration by the general action of light. Shall we print your note? It is marked "private," and we therefore await your instructions. Thanks for the breaking wave.

B. M. F.—The crapy marks are due to the collodion, which gives, apparently, a reticulated film. It is due to the presence of excess of water in the solvents. You may ameliorate, but cannot cure. Let the plate set well before immersion. Try mixing it off with another sample of collodion.

Joseph Paget.—Thanks, in our next. The Society's year commences in February. We shall have pleasure in proposing you. It is better not to drink soft water which is kept in a lead cistern. Almost any varnish will become gradually decomposed. A lining of thin gutta-percha would be best.

Ennel.—We will enquire, and set the matter right. We received the newspaper, but saw the letter too late to use. The india-rubber band used to protect the stopper in collodion bottles is, doubtless, useful. In Mr. Blanchard's case it was a barrel which cracked. The question of front light and side light is, of course, one for discussion, not for dogmatizing on by any one. We have a strong conviction, based on experience and observation, as well as theory, that front light is always troublesome to manage, and in most cases productive of flat results.

W. E. J.—Your diagram and description are scarcely sufficiently clear to enable us to understand your studio arrangements and lighting; but, from your examples, we perceive that you have too much toplight, and intensify too much. When you write again, do employ a larger piece of paper for your diagram; you will find it easier, and we shall find it clearer.

C. Ferneley.—Thanks.

Charles Adin.—Thanks.

R. Slingsby.—Duly received. Thanks.

Magic Lantern.—A correspondent, who gives no signature, asks how he can adapt a magic lantern to enlarging purposes. We fear that with a paraffine lamp he will not be able to do so efficiently, as the light is not sufficiently actinic for such a purpose. Have any of our readers tried experiments in this direction?

Several Correspondents in our next.

***** All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.**

THE PHOTOGRAPHIC NEWS.

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CORKS AND STOPPERS.

Few things of a small kind conduce more to the comfort, or even to the success, of the photographer, than good corks and stoppers perfectly fitting the bottle, and removable without risk or trouble, and few things receive less intelligent consideration and attention on the part of manufacturers, dealers, and photographers themselves.

We noticed recently, in an American journal, an advertisement of a negative varnish, in which, amongst other claims to attention, was the announcement that it was put up in wide-mouthed bottles with good corks. This at once recalled to mind the multitude of annoyances we had suffered from bottles of varnish and other solutions sent out by manufacturers with precisely the opposite conditions: bottles with contracted apertures; bad corks pressed tight in, and then cut off flush before being sealed or tied over. This is annoying enough in case of any solution, and involves the necessity of refitting the bottle with a cork at once; but in the case of bottles of varnish is much more than merely annoying. The piece of cork is generally cemented into the aperture by the varnish which has dried round it. A corkscrew fine enough is rarely at hand; the piece of cork has to be prised out of the bottle with the aid of a knife or a pair of scissors. Being frequently of bad, rotten cork, numbers of fragments drop into the varnish, part of which are fished out of the bottle with much trouble, and the remaining pieces remain to spoil the surface of the first few negatives varnished. This, as photographers know, is a very common and a very unnecessary form of trouble.

Corks for all uncorrine liquids, and such as are not affected by contact with organic matter, are, in our estimation, better than stoppers; but wherever corks are used for any preparation employed in photography, they should be of the very best quality, long and conical in form, elastic, and free from rottenness in quality. A long, conical, and elastic cork will bear all the force necessary to remove it from a bottle to the neck of which even a little dried varnish has caused it to adhere; but a rotten cork will inevitably break in, and cause similar trouble to that just described. Manufacturers should never cut a cork off flush, leaving nothing to grasp with which to withdraw it from the bottle. The neatness of finish so gained is as nothing compared with the trouble and annoyance involved. A really good cork, properly fitting the bottle, is a constant source of comfort, not only stopping the aperture perfectly, but cleaning it of dried fragments every time it is used. In collodion-bottles this is a special advantage, and giving the cork, in our estimation, a considerable advantage over a stopper. As illustrative of useful, well-shaped bottles, capital corks, and perfect corking, we may mention those employed for Newman's varnishes, which are well worth attention as examples in this direction. In any case, whether manufacturers send out bottles judiciously corked or not, a drawer with a selection of the best corks will often be found invaluable in a photographer's operating-room.

Stoppers are not unfrequently as imperfect as corks, very often fitting so badly that, if used with collodion or other volatile preparations, they are utterly insufficient to prevent evaporation. We recently took up a bottle of collodion stoppered as sent out by the maker: a gelatinous mass, instead of fluid collodion, was all that remained. On examining the stopper, we found it could be rocked in one direction from side to side; it had been ground very imperfectly into the neck of the bottle. When this is the case, the wisest and simplest course, if a bottle with a perfectly fitting stopper is not at hand, is to regrind the imperfect stoppers. To ascertain whether they fit perfectly, they should, when fitted in the bottle, be pushed laterally in different directions; if they move at all, it is manifest the orifice cannot be properly stopped, and volatile liquids, or such as are injured by contact with the atmosphere, should not remain in a bottle so stopped.

To remedy this defect, the stopper should be dipped in a mixture of fine sand or emery and water, and then replaced in the mouth of the bottle, and steadily worked with a turning motion backwards and forwards for some time, dipping it from time to time in the sand or emery and water. To ascertain if it is sufficiently ground to fit properly, the stopper and neck of the bottle should be washed now and then, and carefully tried. When the stopper is found to fit firmly, without lateral movement in any direction, it may be finished with a little fine emery mixed with oil, which takes off the extreme roughness left by the sand and water.

As photographers will generally see their stock of stoppers accumulate from the breakage of bottles, they will find it useful sometimes to fit in this way stoppers to bottles the originals of which have been lost, or which have never had stoppers at all. In doing this some trouble will be saved if due regard be had to the shape as well as the size of the orifice to be fitted. In some cases, the bottle is somewhat wide at the mouth, and rapidly contracts in the neck; in other cases the neck is nearly the same width throughout. By selecting a stopper more or less conical in shape, these varieties in the shape of the neck will be readily met.

But the most serious trouble with stoppered bottles is the tendency to become fixed in the neck of the bottle, especially if it contain either strong acids or substances capable of crystallization. The various devices for removing a fixed stopper are tried in succession: the stopper is rapidly tapped with a piece of wood; the neck of the bottle is made hot with friction, to expand it; a piece of cord is tied round the stopper, to jerk it out, &c. Possibly some one succeeds, but generally suddenly, often spilling the possibly corrosive solution over the hands and clothes of the manipulator;

or, possibly, the bottle breaks in the operation, making the disaster worse. All this may be prevented with so little trouble that it is surprising that it is ever permitted to occur. If the stopper be anointed with a little warmed paraffin there is little danger of it sticking in the neck of the bottle. It will stop the aperture just as perfectly, and all risk will be averted. Solution of india-rubber is useful for the same lubricating purpose, but it does not so perfectly resist the action of all acids, and is therefore not so good as paraffin, which answers admirably.

We will conclude these suggestions on a familiar but neglected subject by adding a couple of paragraphs cut from contemporary scientific journals. A correspondent of the *Philadelphia Photographer* says:—

"For a cork for collodion vial I whittle a pine stick into a shape like the handle of a plate-vise, a hole in the centre. Then take a cork a little smaller than will fit the vial, and make a hole through it, and insert the pin of the pine piece (I cement the cork on with shellac). Next take a piece of bladder—like that usually tied over acetic acid corks—and soak it in water until it is soft, then stretch it over the bottom of the cork, and fasten it by tying a string around it where the groove is in the pine piece. This makes a convenient cork to catch in the little finger when using, is perfectly air-tight, and no little pieces of cork break off and fall into your collodion."

An efficient safety stopper for bottles is described in *Scientific Opinion* as having been patented by Mr. Z. Poirier, of Lambeth. It is composed of a short vulcanized india-rubber or cork tube, in the upper part of which is inserted a metallic ring, on which this tube is *kept* fast by any suitable means, either by binding, spurs, expansion, &c. A screw-tapped peg with a conical head is inserted upwards in the india-rubber tube, through which it runs, and is provided with a round screw nut at its upper part. This tube so fitted is inserted in the neck of the bottle to be stopped, and the screw nut being turned to the right with the fingers, causes the screw-tapped peg to move upwards; the conical head of the latter entering gradually in the india-rubber tube presses it against the internal side of the neck at the very place where this neck is conical, and the bottle is hermetically closed, because the conical head of the peg presses the india-rubber or cork tube in its whole periphery against the conical neck of the bottle. To open the bottle, the screw nut must be turned to the left; then, by pushing down the peg, its conical head comes out of the rubber tube, and the stopper is easily removed.

◆

ACCELERATION OF EXPOSURES.

BY JOSEPH PAGET.

Mr. Blair's method of obtaining additional detail in an instantaneous picture by a short exposure of the whole plate to diffused light will, I hope, be of great assistance in that branch of photography, but whether or not the theory he has adopted is correct, appears to me somewhat doubtful. He says at page 555, column 1, of the Photographic News, "It is evident that the patentee had not clearly understood the value of diffused light in bringing up weak impressions, for it was indifferent to his purpose whether the exposure of the plate to diffuse light was *before* or *after* exposure in the camera." Further on he says: "So far as the acceleration or shortening of exposures is concerned, the use of diffused light on the plate beforehand, or in course of sensitizing, must be mere waste, if not positively injurious"; but as he does not go on to tell us that he has tried this plan and found that it does not succeed, I have a right to assume the possibility of its answering as well as his own.

If I have rightly understood Mr. Blair's theory, it may be thus stated: as in mechanics, a greater force is required to put a body in motion than to continue that motion, so a greater actinic power is requisite to excite iodide of silver than will suffice to increase that excitement when it is once begun; that as a spring exerting the force of one pound upon a railway carriage at rest might have no effect in stirring it, yet that after a spring of one hundred pounds acting for a minute had commenced the motion, and caused the carriage to roll for a certain distance, then the one pound spring applied for a minute while the carriage was in motion would cause it to move further than it would otherwise have done. So, as I understand Mr. Blair to argue, if a film containing sensitive iodide of silver receive a short exposure in the camera, the shadows of the picture may receive an impression not quite sufficiently strong to develop, but which a very slight exposure to diffused light may render capable of development. If, on the other hand, the latter exposure were made before that in the camera, it would be insufficient in itself to produce any effect whatever, and would not in any way assist the exposure which followed.

If I have stated Mr. Blair's argument fairly, it will be observed that he assumes as a fact that which, as far as I know, has not only never been proved, but which is contrary to the opinion of most photographers, namely, that a ray of light which we are unable to develop has really produced no effect whatever, and consequently would not produce any effect, though the iodide of silver were exposed to its influence for an indefinite time, in the same way as the one pound spring would produce no more effect in an hour than in a minute.

I believe that those who have devoted the most attention to the subject are of opinion that a sensitive plate exposed to the weakest actinic ray for the shortest period of time is affected in proportion to the strength of the ray and the length of the time, and that it is only the want of a suitable developer that prevents us from obtaining an image. If this theory be true, Mr. Blair's facts appear quite as easy of explanation on it as on his own, and, moreover, it becomes a matter of perfect indifference whether the plate is exposed to diffused light before or after the exposure in the camera.

Let A represent the actinic power of a ray of light; T, the time the plate is exposed to that ray; then AT is the effect produced by that ray in any given time. Let AT be the *minimum* which will cause a deposit of silver under given conditions; let B be the effect produced over the whole plate by the diffused light; and let C be the effect produced in the camera by the image of any object of uniform brightness.

In the case of an instantaneous exposure, the plate being developed without diffused light, it is obvious that where C is less than AT, no deposit will take place, but that if diffused light is used, then if $C + B$ is greater than AT, there will be a deposit, but not otherwise, and that by increasing B we can increase the surface of shadow over which a deposit will take place, until by making $B = AT$, we shall have a fog over the whole plate, even when C = nothing. In practice, we must take care that B is always less than AT, that is, that the exposure to diffused light shall be insufficient in itself to produce any deposit with the given condition of the chemicals.

On this view of the question, it is quite immaterial whether B or C is first applied, for $B + C = C + B$. If Mr. Blair can show experimentally that the same exposure to diffused light is not as effective before as after the exposure in the camera, he may perhaps have overturned this theory; but he will, at the same time, have proved that his method is less useful than I hope it will in practice be found to be.

If no effect is produced when no image can be developed, it follows that though the detail which exists in an instantaneous negative may, by the aid of diffused light, be brought up to a printing strength, nevertheless, no fresh detail can be brought out. If, on the other hand, the judicious use of diffused light, though in itself insufficient to produce any deposit, enables very weak rays to complete the necessary excitement of the silver salt, then it will also give us detail which we could not otherwise have obtained.

But whether Mr. Blair's theory is correct or not, the photographic world is equally indebted to him for calling attention to his facts, and it is not, perhaps, too much to hope that further experiment may enable us to understand better than we now do the action of light upon the sensitive salts of silver. In continuing a discussion of the best mode of applying the diffused light in the Photographic News of Dec. 10, he suggests that it might be obtained by making the side of the glass on which the film rests a reflector, so that the light which had already passed through the film might be sent back through it again, and so produce an additional effect. If the angle included by the lens is so small that the rays of light pass almost perpendicularly through the film, and emerge from it after reflection at the same point as they entered it, this plan may answer when there is no fear lest the negative should contain too much contrast; for it is obvious that the same proportion of the light which enters the film will be reflected through it in each part of the plate, and that the result will be the same as a longer exposure under ordinary circumstances would have given. For instance, if half as many actinic rays are reflected from the surface of the glass as enter the film, and an exposure of one minute is given, the result will be the same as if the exposure had been one minute and a half, and no rays had been reflected. But this effect is quite different from that of diffused light, which acts as strongly upon the shadows as the high lights, and is therefore, I should think, preferable for under-exposed pictures.

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ON A NEW ARTIFICIAL LIGHT SUITABLE FOR THE PRODUCTION OF PHOTOGRAPHIC ENLARGEMENTS.

BY DR. D. VAN MONCKHOVEN.*

III.—Processes Suitable for the Production of Enlarged Images by Means of Artificial Light.

There are two ways of obtaining a large positive from a small negative. To enlarge it direct, or to make a large negative upon collodion or paper, retouch it thoroughly, and then print it in the ordinary manner.

Direct enlargements.—The small negative is placed in the apparatus, and the enlarged image projected for a period of three or four minutes upon bromo-iodized albuminized paper. The preparation of this paper is very simple. A bath is compounded according to the following formula:—

Distilled water	2500 grs.
Albumen, beaten to froth and allowed to subside	350 „
Iodide of cadmium...	40 „
Bromide of potassium	40 „

The bath is of a milky character when first made; it is allowed to stand in a cellar for a few days, and is then filtered, when it becomes as clear as water.

The paper, Saxe or Rive, is floated upon this bath for three minutes, and then hung up to dry, the reverse side being marked with a pencil. To sensitize, it is floated upon a bath of

Distilled water	1000 grs.
Nitrate of silver	70 „
Glacial acetic acid	70 „

The paper is exposed wet, and then immersed in a developer of

Distilled water	1000 grs.
Citric acid	4 „
Pyrogallic acid	2 „

The image is developed, as you perceive, in a very few minutes; it is washed, and then immersed in

Water	1000 grs.
Hyposulphite of soda	100 „
Chloride of gold	½ gr.

It remains five minutes in this fixing solution, and is finally washed in a plentiful supply of water.

Indirect enlargement.—This method is in the majority of instances the preferable mode of proceeding, inasmuch as it is more certain, and capable of yielding more beautiful results. I commence by taking from the negative to be enlarged, a positive (by transparency) of the size of a carte-de-visite, which may be done in the camera with wet collodion; positives produced in this manner are, however, always flat, hazy, and wanting in sharpness, and are in no way comparable with positives obtained by copying the negative upon a plate coated with collodio-chloride of silver. Images secured in this way are much clearer, more transparent, and are capable of enlargement in a third or fourth of the time required for positives on ordinary collodion. In order not to prolong this memoir, I will describe my mode of obtaining these collodio-chloride positives in a separate article.

A transparent positive being obtained similar to the one I have in my hand, I proceed to enlarge it either upon collodion or paper. If the enlargement measures more than 45 by 59 centimetres (17½ by 23 inches) it is best to employ paper, but otherwise collodion is preferable.

I will proceed now to enlarge a transparent carte positive upon a collodionized plate measuring 48 centimetres by 60 (18¾ by 23½ inches). Ten to fifteen seconds, you will perceive, is a sufficiently long exposure of this large negative, which will be found much superior to a negative of the same dimensions produced direct by means of the camera in the ordinary way. When this negative has been properly retouched, any number of good positive prints may be produced from it without further trouble.

We will now produce from another negative a life-size portrait upon Saxe paper, prepared in a bath of

Water	1000 grs,
Iodide of potassium	15 „
Bromide of potassium	5 „

and afterwards sensitized in the aceto-nitrate of silver bath, of which I previously mentioned the formula.

I would call your attention to the time necessary for producing this enlargement. We will allow the damp sheet of paper to remain three minutes exposed to the action of the artificial light, and then develop, wash, and fix it. Here is the finished negative, of which you will be able to judge for yourselves.

With this new enlarging apparatus and artificial light I have shown, then, that without any practical difficulty, it is possible henceforth to be independent of the sun when working in connexion with this branch of photography. In summer it will, without doubt, be always preferable to employ a solar apparatus; but during the long evenings of the winter months, apparatus of this description may be used with advantage.

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DURABLE SENSITIVE ALBUMINIZED PAPER.

BY T. BADEN, OF ALTONA.*

For some time past I have employed a method by which I am enabled to sensitize a large quantity of paper at one time, and to employ it as required. The paper remains serviceable for a very long time, and yields beautiful rich tones.

My plan is to float good albuminized paper upon a silver bath in the ordinary manner, and after it has been sufficiently acted upon, instead of hanging it up to dry, to wash it at once in three or four waters until all superfluous nitrate has been removed. When this has been accomplished, the paper is slowly dried to keep it flat, and preserved from the light in the driest locality possible. In this condition the paper is but little sensitive, and yields flat washed-out prints, incapable of being toned; if, however, before employment, it is submitted to the action of powerful ammonia vapour, and the pads in the printing frames are treated in like manner, the results obtained are surprising. The prints need not be much over-printed, as in the toning bath they soon attain the required tint, which, as before said, is a very agreeable one.

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* Continued from p. 605.

* *Photographische Archiv.*

I do not hesitate to express the conviction that any photographer who experiments with the method will eventually adopt it, as the only condition to ensure success is the sufficient fumigation of the paper and the pads. A lightly tinted border may be obtained if desired, as shown in the specimens forwarded; but the details of this modification I leave for another time.

The old theory that the presence of an excessive amount of nitrate of silver is absolutely necessary for the production of vigorous prints is hereby proved to be fallacious. Perhaps some of our chemical readers can offer a satisfactory explanation of the circumstance.

◆

GUM DRY PROCESS.

BY MM. ABDULLA FRERES, OF PERA.*

The preservative solution is prepared according to the following formula:—

Gum arabic, finely powdered ...	3	grammes
Distilled water	100	"
Gallic acid	0·2	"

After mixing, the solution is allowed to stand for twelve hours, when it assumes the colour of a clear red wine; it is then filtered, and ready for employment upon the sensitized and washed collodion plates. After applying the preservative, the plate is washed for three or four seconds, just to remove any superfluous quantity of the solution. The drying of the plates must be proceeded with without the aid of artificial heat.

The developer is thus composed:—

Distilled water	300	grammes
Pyrogallic acid	2·5	"
Citric acid	0.2 to ·3	

Another mode of preparing the plates is to make a simple solution of gum arabic in distilled water of three to four per cent. strength, and to pour this over the plates in the same manner, washing them afterwards for a few seconds, to remove the excess of gum. Then pour upon the plates a weak solution of nitrate of silver (three per cent. strength) mixed with a few drops of acetic acid, and finally wash them well with distilled water.

The plates must be dried at an ordinary temperature, and the development is conducted with a solution similar to the one above described.

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ON THE ACTION OF LIGHT IN PHOTOGRAPHY.

BY MUNGO PONTON.†

To explain the action of light in photography on mechanical principles, in conformity with the undulatory theory, it is needful to dive a little deeply into considerations respecting the intimate constitution of material bodies in general. To account for the various complex phenomena which these present, as exhibited in chemical affinity, electricity, magnetism, &c., it is requisite to make certain assumptions, which, however, must be viewed simply as such.

Let it be assumed, then, that there are four sorts of matter—two exerting an attractive, and two a repulsive force. Let the two former be distinguished by the letters A and B, the two latter by the letters X and Y. Let their relations be expressed thus:—Every one portion of A attracts every other portion of A, and every one portion of B attracts every other portion of B, but the attraction of A for B is stronger than that of A for A, or of B for B.

In like manner, every one portion of X repels every other portion of X, and every one portion of Y repels every other portion of Y; while the force with which X repels Y is the same as that with which X repels X, and Y repels Y. On the other hand, the repulsion between A and X is assumed to be stronger than that between A and Y; while the repulsion between B and Y is stronger than that between B and X.

Every chemical atom may be regarded as consisting of both A and B associated in very different proportions, but united by an attraction so powerful that they cannot be separated. In every combustible A is supposed to be in excess, in every supporter of combustion B is supposed to be in excess. Thus in any atom of silver A will predominate over B; in any matter of iodine B will predominate over A. These two species are assumed to be in each case so disposed that there are certain poles both of A and B; but in the silver atoms the A poles will be more numerous and powerful than the B poles, while in the iodine atoms the case will be the reverse.

The luminiferous ether is assumed to consist of an intimate mixture of X and Y, constituting a perfectly elastic medium, which, mechanically considered, will be the same as if it consisted of one species of matter only. The force of repulsion by which any portion of this medium when disturbed is restored to rest must be almost inconceivably great. If we regard the force by which any portion of atmospheric air, when disturbed by a sonorous wave, is restored to rest, to be gravity alone, then by comparing the velocity of sound in air with that of light in the ether we obtain a measure of the forces by which the restoration to rest is effected in these two cases, the forces being to each other as the squares of the velocities. Now the speed of light in the ether is upwards of a million times greater than that of sound in the air; so that the force by which the disturbed ether is restored to rest is upwards of a billion times greater than that by which atmospheric air is restored to rest after being agitated by waves of sound. On the same principle it may be concluded that the repulsive force existing in the ether is between three and four thousand million times greater than the force of cohesion in iron. It is, therefore, to be expected that when the agitated ether is brought into relation with the chemical atoms there will be a great amount of force called into play.

From the relations above indicated it will follow that when chemical atoms are introduced into any portion of the ethereal medium they will effect a slight decomposition. The Y matter will be in excess at every A pole, and the X matter at every B pole. Hence, in the atmosphere of ether surrounding the atom of any combustible element—such as silver—the Y species of ether will predominate; while in the ethereal atmosphere surrounding the atom of any supporter of combustion—such as iodine—the X species of ether will be in excess; but there will always be a tendency to effect an equilibrium between these two.

In such a substance as iodide of silver there will be a strong attraction between some A pole of each atom of silver and some B pole of each atom of iodine, in virtue of which these two will be held in close proximity, so as virtually to constitute a compound atom or molecule of iodide of silver. They will not, however, be in absolute contact, but will be separated by a layer of highly-compressed ether. In this intervening layer of ether the Y species will be in excess close to the A pole of the silver, and the X species will be in excess close to the B pole of the iodine, while midway between the two X and Y will be intermingled in equal proportions. Between the molecules of iodide of silver, again, the intervening spaces will be larger, the ether less highly compressed, and the mixture of X and Y will be in equal proportions, as in the general medium.

In the dark, and at moderate temperatures, the molecules of iodide of silver will vibrate gently to and fro, being urged by those slow invisible undulations of the ether intermingled among them which constitute heat. But when the quicker luminous undulations are introduced into the ether, in which the molecules of iodide of silver are at any given moment enveloped, a different and additional effect is produced. A vibration is set up between each atom of silver and its corresponding atom of iodine, which constitutes the molecule of iodide of silver. Owing to the great proximity of the silver atom to the iodine atom the vibrations between them can have but a very small amplitude intervening, consequently their natural rate of vibration must be extremely rapid. Hence their vibrations can be synchronous only with the more rapid of the luminous vibrations, namely, those at the violet end of the spectrum. It is, accordingly, only these last that can originate the minute vibrations between the iodine and the silver; but these, when once established, may be sympathetically prolonged by undulations which are double their length and half their period, as are those at the red end of the spectrum. Thus, supposing the atom of silver to be set vibrating against the atom of iodine by the violet waves at the rate of 800 billion times in a second, every alternate vibration might receive a fresh impulse from luminous vibrations at the rate of 400 billions in a second. This consideration explains why it is that the red waves, although unable to establish the photographic action, are yet able to continue it after it has once been commenced by the action of the violet waves.

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* *Photographische Archiv.*

† *Engineer.*

In order to explain how these minute vibrations established between the silver and iodine atoms should tend to favour their ultimate separation, it is needful to consider the state of the ether between them. Let the diagonal lines sloping upwards from left to right represent the A species of matter, diagonal lines sloping upwards from right to left the B species, the horizontal lines the X species, the vertical lines the Y species, while the intermixture of X and Y constituting the general ethereal medium is represented by the cross hatching. Then the point of attraction between the A pole of the silver atom and the B pole of the iodine atom may be represented thus :— As A and B will alternately approach and recede, the tendency of the vibration will be to promote the intermixture of the peculiar atmospheres X and Y, and so restore the equilibrium. After the vibratory action has been continued a certain length of time, it may be assumed that the intermixture will be rendered complete, when there will remain between A and B nothing but the compressed ether in its normal state. The effect of this will be to remove A and B a little farther asunder, and so to weaken the attraction between them. For A will no longer be in immediate proximity with Y alone, for which it has the least repulsion ; while B will no longer be in immediate proximity with X alone, for which it has the least repulsion ; so that both will be acted upon by a greater amount of repulsive force than before, counteracting to a greater extent the mutual attraction between A and B.

These effects being kept in view, two cases of photographic action present themselves for explanation—that of the moist and that of the dry collodion film. In the former, the vibratory action between the silver and iodine atoms, composing each molecule of iodide of silver, may be supposed to continue for a considerable time after the stimulus of the light is removed, like the thermal vibrations in the case of a body which is slowly cooling. When the developer is applied during the subsistence of these after-vibrations its action will be promoted by the motion ; because, at alternate intervals, the attraction between the iodine and the silver is weakened, and the moment of greatest weakness is taken advantage of by the developer to effect their separation. If the application of the developer be too long delayed the motion becomes more and more languid, the A and B poles gradually regain their atmospheres of Y and X respectively, and all things return to the state in which they were before the action of the light began. Hence the developer fails to effect the decomposition after a time.

In the dry collodion film, again, it is more difficult to establish the vibratory motion between the silver and iodine atoms, composing the molecule of iodide of silver, by reason of the rigidity of the film—a difficulty evidenced by the longer exposure to the action of light found requisite. For the same reason, it is probable that the moment the action of the light ceases the vibrations are instantly stopped. Now the general tendency of the vibrations has been, as already explained, to widen the interval between A and B, and so to weaken their mutual attraction. Hence, when the vibrations suddenly cease, a large number of the atoms will be arrested, while their separation is greater than what it was before the light began to act. This condition of increased separation may be preserved for a very long time, owing to the hindrance to motion presented by the dryness and rigidity of the film. Hence it is that, in the case of the dry film, the developer will act at a very long interval after the exposure to light. The attraction between the iodine and the silver has been permanently weakened, owing to their poles having been suddenly arrested in positions further asunder than they are in the normal iodide.

The action of ozone in preventing the decomposition of the iodide of silver by means of a developer, after exposure to light, is in all likelihood purely chemical. The ozone probably unites with the iodine, and these two, by their combined attraction, may retain the silver with a force too powerful for the developer to overcome. The prolonged action of ozone might, nevertheless, cause a separation of part of the silver in the form of oxide, as probably happens in the experiments of M. Niepce.

ON THE OXIDATION OF PYROGALLIC ACID.

BY M. AIME GIRARD.*

When the oxidation of pyrogallic acid takes place in an acid solution, it is accompanied by an unexpected phenomenon of reduction to which I propose calling attention in this note.

Under ordinary circumstances—that is to say, in the presence of an oxidizing agent and an alkali—pyrogallic acid becomes transformed into oxide of carbon and alkaline acetate and carbonate, to which are added certain highly coloured and uncrystallizable products ; if, on the contrary, the same compound is subjected to the action of an acid oxidizing agent, there is at once formed, on the one hand, oxidized products, of which the principal are the oxide of carbon and carbonic acid, and on the other, a reduced compound, as interesting in its mode of formation as in its properties.

If we mix, for example, a solution of nitrate of silver with a solution of pyrogallic acid, and recover by means of alcohol the precipitate at once formed, we shall find that besides reduced silver, this deposit contains a new product of a red colour, neutral, volatile, and presenting in many respects a remarkable, although perhaps superficial, analogy with alizarine and purpurine extracted from madder.

The composition of this new product corresponds to the forumla $C_{20} H_8 O_9$, or rather, $C_{40} H_{16} O_{18}$, as the analysis given below demonstrate, some of which were undertaken upon crystallized samples, and others upon the sublimed material.

					Mean	Calculated
Carbon	59.6	60.0	60.0	60.1	59.9	60.0
Hydrogen	4.0	3.9	4.0	3.9	4.0	4.0
Oxygen	36.4	36.1	36.0	36.0	36.1	36.0
	100.0	100.0	100.0	100.0	100.0	100.0

Like nitrate of silver, other oxidizing agents are capable of giving birth to this product, but the compound by means of which it is obtained with the greatest regularity is permanganate of potash supplemented by sulphuric acid. Whatever oxidizing agent may be employed, however, to obtain this new product, it is necessary to conduct the operation with prudence, as otherwise the result will be those highly coloured bodies almost invariably produced when oxidizing gallic compounds.

I shall content myself in the present communication by simply indicating the manner which, up to the present moment, has afforded me the best results. The oxidizing solution is formed of sixty grammes of permanganate of potash dissolved in a litre of water, and each litre is supplemented by fifty-five grammes of monohydrated sulphuric acid. The pyrogallic acid is dissolved in a small quantity of water, and the oxidizing solution is allowed to fall gently therein, care being taken that the temperature of the liquids is not a high one. The pyrogallic solution at once assumes a dark yellow tint, and becomes brown if the action is too energetic ; a mixture of oxide of carbon and carbonic acid is disengaged with effervescence, and a deposit becomes formed of crystalline flakes of a beautiful reddish orange tint.

In my experiments, undertaken, of course, with small quantities of material, I have never obtained less than twelve per cent. of product out of the pyrogallic acid employed. The orange flakes are washed in a little water, then dissolved in alcohol, or sublimed. The product, which is anhydrous, has in both cases the same composition and properties, and to it I have given the name of purpurogalline.

In the preparation of this body the oxidizing agent should not be added in an indefinite quantity, for the purpurogalline, as I shall show presently, is itself oxidizable, and the employment of an excess of nitrate of silver, of permanganate of potash, &c., transforms it into a more deeply coloured product of a brown tint, and not crystallizable. It is, no doubt, due to the formation of this latter product (the creation of which I have hitherto been unable to prevent) that the pyrogallic acid does not yield a larger amount of purpurogalline than the quantity above mentioned; but be this as it may, if a solution of permanganate, such as I have mentioned, is employed, 250 cubic centimetres suffice for ten grammes of pyrogallic acid.

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* Communicated by M. Dumas to the Academy of Sciences.

The oxide of carbon and carbonic acid are the principal oxidized products which accompany the purpurogalline. Besides these, I have recognized the presence of oxalic acid, but I have been unable to determine till now whether this acid is a product of the primitive reaction, or if it is the result of a secondary one. The formation of carbonic acid and oxide of carbon, and the production of water, suffice, nevertheless, to explain the phenomenon, as shown by the two following equations:—

$$4\,(C^{12}\,H^{6}\,O^{6}) + O^{10} = C^{10}\,H^{16}\,O^{18} + 8CO + 8HO.$$
$$4\,(C^{12}\,H^{6}\,O^{6}) + O^{18} = C^{40}\,H^{16}\,O^{18} + 8CO^{2} + 8HO.$$

The sublimed purpurogalline is in the form of beautiful needles of a red garnet colour, more highly coloured and brilliant than alizarine crystals. Its sublimation takes place at about 200° Cent. In an ordinary way this sublimation is accompanied by incipient decomposition, but the latter is easily prevented by projecting the compound upon a bath of mercury warmed a little beyond 200° Cent. It is difficult of solution in water, more soluble in alcohol, and equally soluble in ether and benzole. It colours all the solvents of a yellowish colour. It dissolves in sulphuric acid, and forms therewith a crystallized compound in the form of fine crimson needles, easily decomposed by water. The majority of acids dissolve it without altering its properties. Nitric acid attacks it vigorously, the monohydrated acid will even inflame it, while ordinary acid converts it into picric acid.

The solutions of purpurogalline assume, in contact with potash and ammonia, a beautiful blue tint, but this colour is ephemeral, and, after the lapse of a few minutes, passes to a green, and subsequently to a yellow tint.

Lime water, as also baryta water, colour the solutions of a blue violet, but the tint rapidly disappears. Sulphate of quinine does not modify the yellow tint of the solutions of purpurogalline, but if ammonia is added, a precipitate is soon formed of a blue-violet tint, which afterwards passes to brown. Acetate of lead gives rise to a brownish-red precipitate. Nitrate of silver colours the liquid of a blue-violet tint, which soon changes to brown, and finally the silver is separated in a metallic state. Chloride of gold causes a very brilliant carmine tint, which also disappears and gives place to a brown colour, and subsequently a deposit of metallic gold is formed.

The facts here deduced clearly show that purpurogalline, although stable enough when isolated or placed in an acid medium, oxidizes rapidly when in the presence of bases.

Purpurogalline is an energetic dyeing material, but the colours it affords possess but slight brilliancy; an investigation in reference to its employment for industrial purposes would, nevertheless, be possibly attended with success.

The behaviour of gallic and tannic acids under similar circumstances will form the object of a further investigation.

ON THE PROPORTION OF ACTINIC LIGHT STOPPED BY A SOLUTION OF BISULPHATE OF QUININE,

AND

ON THE VALUE OF A SOLUTION OF BICHROMATE OF POTASH AS AN ADI-ACTINIC MEDIUM.

BY JOHN M. BLAKE.*

THERE has been some discussion in the columns of the PHOTOGRAPHIC NEWS in regard to the efficiency of a solution of sulphate of quinine confined between glass plates for arresting actinic rays, the proposition having been made to substitute such an arrangement for the yellow glass in dark rooms.

In the NEWS for September 10th is an abstract from a paper on the chemical reaction of light on certain vapours, read by Prof. Morren before the British Association, in which the following remarks occur:—"And here I wish to notice, in passing, an interesting fact, important especially to photographers. I mean the power of intercepting only the chemical rays of solar light, without stopping the luminous rays, possessed by a solution of bisulphate of quinine well filtered, and confined by means of gutta-percha between two glass plates. This screen, of five millimetres in thickness, is of an extreme transparency to light, but the chemical rays are intercepted. It might be advantageously used instead of yellow glass, which, in photographic operations, casts on all objects such peculiar hues as require a special education of the eye, which has to judge of the reactions."

The editor, in the same number of the NEWS, commends the experiment to his readers. In the next number is a communication from Mr. B. Ford as follows:—"Referring to your notice of Prof. Morren's experiments on light, I may briefly state that I have used a diaphragm or screen such as you describe, for some years. I have tested various adi-actinic solutions, but find that the yellow chromate of potash, or the bisulphate of quinine, answers the purpose better than any I have yet tried, from the great quantity of non-actinic light which they transmit. I use the solutions confined between plates of glass. I may also state, as a proof of their efficiency, that I have a cover for the lens made with plate glass, confining a stratum of either of the above solutions. I use this cover so that in out-door practice I can focus at once upon the sensitized plate in the camera. I have constructed a camera for field purposes, whereby, taking advantage of the properties of the above solutions contained between glass plates, I can sensitize and develop a plate in the open air with greater ease and certainty than by the ordinary method in the dark room."

In the NEWS of October 1st is a communication from Mr. John Spiller, F.C.S. (taken from the *Photographic Journal*). He remarks:—"It is, however, somewhat remarkable to note the continual reiteration of this scientific error, which crops up periodically in the photographic journals," &c. He calls attention to the fact that in 1854 Mr. Crookes exhibited photographs of the solar spectrum taken upon iodized and bromo-iodized plates, the light having passed through a strong solution of quinine contained in a glass cell measuring one inch across; and asserts that it is now imperative that further evidence should be collected before the statements of M. Morren can be received.

It would seem that this should have been sufficient to set the matter at rest as far as the employment of quinine screens for photographic dark rooms is concerned, for Professor Morren's experience simply goes to show that those rays producing the peculiar reactions on the vapours experimented upon by him were rendered inert by the solution of quinine.

Another photographic application of the optical properties of quinine has been proposed. This will be understood from the following quotation from Hardwich's "Photographic Chemistry":—

"Sir John Herschel proposed to render coloured light more available in photography by separating the actinic rays of high refrangibility, and working only with those which correspond to the blue and green spaces in the spectrum. This may be done by placing in front of the camera a vertical glass trough, containing a solution of sulphate of quinine. Professor Stokes has shown that this liquid possesses curious properties. In transmitting rays of light it modifies them, so that they emerge of lower refrangibility, and incapable of producing the same actinic effect. Sulphate of quinine is, if we may use the expression, opaque to all actinic rays higher than blue-coloured space. The proposition of Sir John Herschel, above referred to, was therefore to employ a bath of sulphate of quinine, and, having eliminated the actinic rays of high refrangibility, to work upon bromide of silver with those corresponding to the lower coloured spaces. In this way he conceived that a more natural effect might be obtained."

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* *Philadelphia Photographer.*

"If photographic compounds should be discovered of greater sensibility than any we at present possess, the use of the quinine bath will perhaps be adopted."

It will be noticed that the exact amount of retarding influence of a quinine bath on an ordinary exposure in the camera or otherwise has not been noted, and this seemed a matter of practical importance; therefore I was induced to undertake a few experiments, the first object being to determine this point with sufficient accuracy for practical purposes.

A good commercial sample of sulphate of quinine was used, and it was found to dissolve completely in thirty parts of boiling water, and twenty-five parts would not dissolve it. The bisulphate was prepared from this, but the resulting concentrated solution was not entirely colourless, and it was allowed to deposit crystals. The crystals obtained were dissolved in water for use. A careful estimation of the solubility of this bisulphate was made. At the temperature of the room—between 60° and 70° F.—it was soluble in 10·93 parts of water, the salt, as dried at 120°, being understood. The crystallized salt effloresced in dry air. The cold saturated solution of the sulphate, containing one part in seven hundred and forty of water, gave some evidences of fluorescence when examined by passing into it sunlight concentrated by a lens. This I found to be a powerful means of making the peculiar action of quinine on light visible. The entering beam was illuminated for a depth of about three-fourths of an inch, and was of a violet colour. The addition of a few drops of sulphuric acid to the solution at once greatly increased the fluorescence, the beam being illuminated for a distance of about five inches into the solution, and of a beautiful blue colour. The saturated solution of the bisulphate being much more dense, the entering beam of highly-concentrated sunlight appeared of an intense blue; but strikingly so only for a distance of one thirty-second of an inch, or less, from its point of entrance into the solution, showing that nearly the maximum effect had been produced on the beam by a much less depth of solution than three-sixteenths of an inch actually used in the experiments. This much to show that a good sample of quinine was used, for were there a possibility of a mistake in this direction, the results to be given might be called in question.

The interposition of a cell of saturated solution of bisulphate of quinine three-sixteenths of an inch in thickness, made nearly three times the exposure to either diffused or direct sunlight necessary to produce the same amount of coloration in chloride of silver paper as would be required if the cell contained simply water. The same was the case with chromotype paper. In the experiments on sensitive collodion, stereo plates were used, exposing one-half of the plate a certain time in the ordinary way, and the other half through a quinine cell of the thickness mentioned. A simply iodized collodion, a bromized, and an ordinary bromo-iodized collodion were tried, and in each case two and one-half times the exposure was required, where the quinine cell intervened, to render both halves of the plate of equal density.

It was undertaken to test the value of the quinine cell, and a lengthened exposure for the better rendering of colours. The plates used to determine the retarding influence of the quinine solution had been exposed to the image of a variety of coloured objects, such as would be liable to occur in actual practice—green leaves of various shades, and coloured worsteds and papers. A careful examination of the negatives produced failed to detect an advantage in rendering colours by the use of the quinine cell. The bromized collodion gave vastly better results than the iodized, both as regards colour and shades, but simply for the reason that has been given by others, that the bromide of silver was more sensitive to the darker shades of white light than the iodide.

It seemed a point of interest to ascertain if the blue light, diffused from the beam of sunlight entering the solution, could be photographed, the action of a fluorescent medium being considered as effecting a reduction in the refrangibility of certain invisible actinic rays, and the light dispersed from the path of entering rays to be the same ligh thus reduced. A square inkstand, having polished plan sides, was filled with a solution of bisulphate of quinine containing one part in seven hundred and forty of water—, made thus dilute that the entering rays might be coloured to some depth into the solution. This was placed before a camera, sunlight was passed through one side from a condensing lens, and the camera was focused on the beam through the adjoining side. All parts of the glass vessel not required to be transparent were covered with black varnish, to absorb stray light. The resulting negative showed the light from the entering cone of rays to have considerable actinic power. The sunlight, at the point of entrance, was concentrated sixteen times. Here sufficient light was dispersed to produce a deeper impression on the plate that white paper shielded from the direct rays of the sun, but exposed in a well lighted room. Notwithstanding the rapidly increasing concentration, as the light came to a focus, one and one-half inches back in the solution, the amount of impression on the plate was nearly uniform to the apex of the cone, showing that the diminution of the dispersed light kept pace with the concentration of the beam. Thus we have approximate data for determining the law of decrease in the dispersed light with the depth of solution. In this case there was nearly a balance, which would not have occurred, other conditions being equal, had the solution been more concentrated. The actinic action of the dispersed light could not have come from floating solid particles, for in this case the light must have increased toward the apex of the cone. Again, the same exposure was tried with the cell of dense solution of quinine interposed between the condenser and vessel. The impression now produced on the plate was faint, and only that produced by one-eighth the exposure, as at first, proved by another trial. The blue light of the sky, supposed by Professor Tyndall to be caused by the action of light, as upon the vapours examined by him, the ordinary practice of photography shows to be quite actinic.

Since writing the above, the Photographic News for October 22nd has been received. Mr. Spiller has found, by experiment with solutions of quinine of various depths and degrees of concentration, that it would be utterly impossible to substitute this mode of illumination for that by yellow glass. It is understood now that Mr. Ford used another salt in addition to bisulphate of quinine.

Before concluding, I will state that careful experiments have entirely convinced me of the great value of a solution of bichromate of potash as an adiactinic medium. A thickness of three-sixteenths of an inch of a two-thirds saturated solution of bichromate of potash was compared with a deep yellow glass, the composition of which I have not yet determined. It was coloured throughout, and a common variety. It was probably not equal to the best of non-actinic yellow glass. A sample of deep yellow paper, such as used for envelopes, was also tried. A collodion film was exposed under each for two and one-half minutes, three-quarters of an inch back of a circular aperture, one and one-half inches in diameter, in the side of a box, the full light from an overcast sky being admitted. The result was, no perceptible darkening under the bichromate cell, but a ruinous fogging under the paper, and twice the amount under the glass. Ten minutes exposure under the bichromate cell produced a perceptible fogging, judged to be one-fourth that produced under the yellow paper in one-fourth the time.

A comparison of the amounts of luminous rays transmitted by each was made by the method of equalization of shadows, varying the apertures at the same distance from the body throwing the shadows. This showed the three media to stand as follows: light admitted by yellow paper, one; by the yellow glass, ten; by the bichromate solution, thirty. Indeed, the superiority of the bichromate of potash solution was strikingly manifested by the ease with which the film could be viewed under it during exposure, while it could be scarcely seen under the yellow glass in the brightest light.

Even should we substitute yellow paper for the bichromate solution, using thirty times the area of the former, for the purpose of lighting the whole interior of a room to an equal degree, we could not obtain, by any possibility, by nearing the window, to secure the highest degree of illumination, but one-thirtieth of the light we could obtain by a near approach to our bichromate screen.

Let us now compare the other advantages. The values of the three media to exclude actinic rays stand approximately as follows: yellow paper, two; yellow glass, one; bichromate solution, thirty-two. The combined advantages of the several media then stand in this proportion: yellow paper, one; yellow glass, five; bichromate of potash solution, four hundred and eighty.

I have since tried chromate of potash, which was suggested by Mr. Ford, and find that its solution, made of the same tint as the saturated bichromate diluted sixty-four times, was about three times as effective in stopping chemical rays; but nearly fifty times as much weight of the light-coloured chromate was required; and, therefore, it is probable that the bichromate will be most generally used.

The distribution of the absorption bands in the transmitted spectra of different solids and liquids make it seem possible that, by a combination of two media, each of which, separately, may be insufficient, we may hope to arrive at a yet more perfect exclusion of actinic light, with increased power of transmission of the visual rays.

It now remains for some one to contrive a cell of glass that will safely hold a solution of this poisonous substance; the term dark room can then be dropped from the photographic vocabulary. The principal danger would arise from leakage; cemented cells are not often reliable. Common thin and light-coloured glass bottles may be made serviceable until something better can be obtained, diluting the bichromate solution as its depth requires, so as to admit as much light as consistent with safety.

Experimental cells can be made by dipping a piece of rubber tube in a rubber solution, and arranging it between two plates of glass, and then compressing the sides of the cell by clips.

THE NEGATIVE, VARNISHED AND UNVARNISHED.

BY PROF. JOHN TOWLER, M.D.*

I have had negatives exposed to the direct light of the sun, both varnished and unvarnished, for now about six months, and have watched the effects produced by such an exposure. All the unvarnished negatives have gradually become more intense, and some of the finer markings have become obliterated by a species of deposition that has filled up the interstices or interspaces. One of the unvarnished negatives was developed with a cuproferric developer; it, too, is now more intense than when recently developed, and has a bluish-black colour by transmitted light, and a copper colour by reflected light.

During this period of exposure, the varnished negatives have undergone no change of colour or intensity. The varnish used was a simple solution of bleached shellac in alcohol, filtered through paper. It is evident, therefore, that the varnishing of the negative protects the film from what we may denominate the aerial or atmosperic influence, which influence, I think, without any doubt, is the cause of the deterioration of the dry plate, even when perfectly isolated from light. It becomes now a problem to be solved, or at least a question to be answered in positive terms, which varnish has the most protective efficacy against the changes produced by the atmosphere. This question can be answered only after a course of careful experiments.

But the negative has to be protected against the wear and tear of the printing operation; and for this purpose the varnish, when dry, must not soften or become tacky when intensely heated, nor dissolve in water. Thus the varnish for the printing negative must be different from that applied to the dry plate before exposure, for in the latter case it is necessary that the varnish be soluble, in order that the developer may permeate its film, in order to arrive at the collodion surface. Thus, then, we have two sorts of varnishes indicated: one set for printing negatives, and the other for preservatives of dry plates, as they are called. The former are composed of certain admixtures of the gum resins; and the latter of the soluble gums, gelatine, sugar, starch, albumen, and a drying or astringent material, to prevent deliquescence. It is not our intention in this article to point out which varnish or preservative is the best, and this for a simple reason—we do not yet know which is the best.

There is, however, one property of the negative varnish which has never yet been hinted at, and this probably because it has never been observed. I will call your attention to it now, first requiring you to make the experiment yourself. Select a firstrate negative, cabinet size, for instance, a portrait, and take a print of it before is is varnished. Now prepare the following varnish, or use any other good light-coloured varnish:—

Alcohol...	32 ounces (1 quart)
Bleached lac	4 „
Sandarac	2 „
Canada balsam ..	4 drachms
Essential oil of lavender	1 ounce

As soon as the gums are dissolved, filter the solution through paper or a fine sponge, and varnish the negative in the usual way. Let the film indurate thoroughly in the air, and then varnish again. Repeat the operation at least six times for the experiment in question. The film at this stage has the appearance of an enamelled surface. Take a print from the negative thus prepared, and compare it with the former. You will find a decided difference between the two prints, and the latter in general will be the most admired. By increasing the number of coats of varnish the print becomes gradually more soft. But there is a limit to this operation, beyond which the print grows worse and worse; and finally, all the fine and sharp marks become obliterated.

PHOTOGRAPHIC ITEMS.

BY M. CAREY LEA.*

Photography in colours.—A very curious instance of two persons working in the same direction at the same time, unknown to each other, is that of M. Ducos du Hauron and M. Cros. The description by M. Cros of his process appeared in the journal of the Abbé Moigno, *Les Mondes*, exactly two days after the date of the patent issued to M. Ducos de Hauron for his process.

But it would seem that, whilst the idea hit upon by both these gentlemen was extremely ingenious, it was scarcely of a sufficiently practical nature to be patented. Starting upon the basis that all colours may be produced by the admixture, in due proportion, of some two, or the whole three of these, viz., red, blue, and green (taking the red of an orange shade, so that it may, by dilution, give a yellow, and the blue of a blue-purple), they propose first to analyze the colours of all natural objects into these components, and then to recompose the original colours. Three views of any group of objects are taken upon paper sensitized with bromide of silver; in one of the exposures a green glass is interposed, in another a red, in the other a purple; then a transparent pigment print is taken with each of these negatives by the carbon process. With the negative that was taken when a red glass was placed in front of the objective a red pigment print is taken, with the blue a blue, &c. Then, when these three transparent red, blue, and green prints are superposed, the combination produces a picture in all the natural colours.

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* *Philadelphia Photographer.*

* *Philadelphia Photographer.*

Ingenious as this idea undoubtedly is, the difficulties in the way of execution are evidently extremely great, and these difficulties are not merely of manipulation, but there exist very great defects of principle.

Let us suppose, for example, that one of the negatives has been taken with the interposition of a coloured glass, then it is evident that, to get the colours correctly represented, there is only one exact intensity proper for *each* of the other negatives. How is this to be hit? There is not the faintest indication to be had, nor is it possible that one should be found. The operator can only go on and hope for the best, and, if he does hit the correct exposure for the other two negatives, it will require a great deal of cleverness and a great deal of luck.

But, to obtain a full measure of the difficulties in the way, it must be observed that a very large proportion of the coloured objects which present themselves, do not impress themselves photographically by means of their colour, but, by means of the white light which they also send back. This fact is one that I have before strongly urged upon the notice of photographers, and it becomes, in the present case, of great importance. An object, for example, which should send to the camera red rays only, could certainly not be expected to impress itself upon a film of bromide of silver. It is the surface-light, which, in the case of almost (but not quite) all, substances, is white, which enables such substances to impress the sensitive silver film. This fact that coloured substances send back also white light, is rendered conspicuously evident by observing the effect of coloured light upon such substances.

For example, when the sun's rays fall directly upon the stained glass in a church window, there are produced bright patches of coloured light. These, in falling upon any coloured surface, always produce an effect of colour corresponding with the glass through which they pass. If, for example, a green patch of light falls upon a red surface, the effect is still green, not red. If the red surface did not reflect white surface-light, this result could not be produced, and the green light, falling upon the red surface would be altogether extinguished. The proof is even more striking when the coloured light falls upon a black surface, as, for example, a black stuff. Here, also, a distinct colouration is always visible; it is faint, and naturally so, but the red beam is reflected back pale red, and the green, pale green. And this can only be so by virtue of the white light which even a black object returns to us, a surface-light independent of its colour. And it is exactly this white surface-light that enables these substances to impress themselves upon the photographic film.

It follows, inevitably, that the amount of impression which these non-actinic colours are capable of making, depends not upon their intensity of colour, but upon the amount of white light which they reflect. And this is a serious, if not a fatal objection to the process of M. Ducos du Hauron. The relative intensity of the colours of objects in his pictures, obtained through the red and the green glasses, will not depend upon the relative intensity of the colours of the objects (as ought to be the case for a correct representation), but upon the quantity of white light which they respectively return.

Cleaning copper.—When it is desired to obtain a clean, bright surface upon copper, it is customary, in all countries, to use nitric acid. In this way the desired surface is obtained with little trouble, and at once; there is, however, the objection that a considerable quantity of nitrous fumes are given off, and these red vapours are not only extremely disagreeable, but are very prejudicial to health.

It occurred to me lately, that the production of these vapours might be avoided by adding a little solution of bichromate of potash to the dilute nitric acid. Experiment proved that this answered perfectly. The copper surface was brought out clean and bright, without any disengagement of vapours.

On sanitary grounds this method of operating deserves to become extensively known. In the manufacture of copper-ware, a great deal of this cleaning is done, and the frequent exposure to the fumes cannot but be very injurious to the workmen. In Naples there is a street of coppersmiths, and, in pleasant weather, they carry on their work in the street itself, which is filled with workpeople plying their trade. The cleaning, especially, is done out of doors, and I remember to have seen quantities of red fumes floating upon the air. and poisoning it with hyponitrous acid, which irritates the throat and chest extremely, and, when inhaled frequently, cannot but lead to serious injury to the lungs. With the aid of a little bichromate of potash all this might be avoided.

Carbonic oxide.—Although this gas, when present in the atmospheres of rooms, generally proceeds from bad drafts, yet it has been recently shown, by the careful examinations of a commission of scientific men appointed for that purpose in Paris, that it may also be produced by hot surfaces of iron, such as the ironwork of stoves. At first, a certain amount of doubt attached to this assertion, but careful study seems to have placed the fact beyond doubt.

This matter is of importance to every one who sets any store by his health, but, to the photographer, it has a special interest.

It is important to every one, because carbonic oxide is highly poisonous. It does not, when existing in the dilute state in which it is found in rooms, excite sudden or severe illness, but it slowly undermines the health, reducing the vitality of the brain, and generally diminishing the activity of the individual and his aptitude for his work.

But, to the photographer, it has a special importance. The sensitive film is easily acted upon by impurities in the atmosphere, especially if they be of a "reducing" nature, that is, if their tendency be to deoxidize; and this is the case with carbonic oxide.

The photographer should, therefore, at this season give especial attention to his means of heating. He should assure himself that the drafts of his fire-places or stoves act well in all weather; if they do not, the draft should be increased by a cap to the top of the chimney; if necessary, a metal cap with sections of cones to keep the eddies of wind from neighbouring walls from driving down in boisterous weather. The action of the hot iron just spoken of, should be prevented, first, by avoiding all cast-iron stoves, and using wrought-iron ones only; and second, by seeing that the iron surface is well protected by a cylinder of firebrick. Even with a good cylinder, if the coal be piled on too high, and the fire be urged too much, the iron may be made red-hot; this should never be permitted,

Our senses seem to have been so constituted that, after giving us a distinct and well-marked warning, they then gradually accommodate themselves to whatever the individual insists on exposing them to. So that, when we first pass into a room of which the air is contaminated, we are made strongly conscious of the fact. If, then, we nevertheless choose to remain there, the sense of smell gradually accommodates itself to the atmosphere, and, the warning having been given and disregarded, we lose our consciousness of the contamination. Consequently, it by no means follows that the air of a room in which we have remained some time is pure, because we do not perceive it to be otherwise.

The photographer should, therefore, make it an invariable rule to judge of the purity of the atmosphere of his rooms by the impression made upon him on first entering from the fresh air out of doors. No inside atmosphere that will not bear this test, carefully and critically applied, is fit to live in, and I think I scarcely exaggerate in saying that in fully one-half the whole number of cases this test cannot be supported.

Want of definition.—This fault in paper positives is not at all an uncommon one, and often it is not in the least the negative that is to be blamed. The introduction of various sorts of new printing-frames has done no small mischief. These contrivances are often ingenious and convenient; they admit of rapid handling, and they especially are recommended for absence of danger of breaking negatives, and no wonder, for often they scarcely exert any pressure—none sufficient to insure perfect contact.

The old-fashioned bar-frame is far better than these self-styled "improvements." It distributes the pressure more equally over the plate, and, when properly handled, gives a clean, sharp print, free from the fuzziness and indistinct outline that mark prints made when the paper is not close up to the film. The curved springs under the bars rest at each end on the back, and exert a gentle but steady elastic pressure. It is much better to avoid danger of breaking negatives by using proper packing; that is, thick elastic felt. That sold as piano-cloth is most excellent.

MANY MITES FROM MANY MINDS.

BY EDWARD L. WILSON.*

Good chemicals are always true; like clock-work, they cannot be reversed in their action and work well.

Never delude yourself with the idea that successful photographers possess secrets which they preserve to themselves. It is a mistake; definition, manipulation, and cleanliness, are all-important things, but not all the important ones; composition, posing, light and shade, and many other things demand attention.

Do not stop to theorize when careful practice is convincing.

If you get into trouble, it is a waste of time to try to convince yourself, by theoretical disquisitions, that you ought not to be in such condition, but acknowledge the corn, and work yourself out amiably and industriously.

Unsettled collodion, a polluted bath, dust in the camera, knocking the dark slide when the plate is in, sediment in the collodion, all cause transparent spots; opaque spots are caused by using an unfiltered developer, dust falling on the plate while being coated, little bits of dry collodion falling from the lip of the pourer, dust and dirt from the dark-slide, and by a profusion of ether and alcohol in the bath.

Lines on the plate may be produced at will: zigzag ones by a want of harmony between the bath and collodion; triangles, extending from the bottom of the plate upwards, by a scum floating on the surface of the bath; dark opaque ones, running down from top to bottom, by unequal and careless development; turtle-shell lines, by too much ether and alcohol in the bath; and curved ones, by a too strong developer.

If the collodion presents a mottled appearance, it is too thick. Dilute it with a little plain ether.

Poor collodion, dirty glass, pushing the development too far in case of under-exposure, and intensifying a weak image, all create a tendency in the film to peel off when dry.

If the plate is immersed in the bath before the collodion is well set, opaque white marks and streaks will appear at the end of the plate where the collodion was poured off. If the plate is kept out too long, transparent marks will appear at the other end.

In an over-exposed plate the shadows have nearly as dense a deposit as the high lights. If under-exposed, the picture will be very intense where the light has acted most, and nearly transparent in the shadows. Prints from the former are weak, and lack contrast, and from the latter are deficient in detail.

Do not keep your paper too long sensitized before printing, or too long after printing before toning. If you do, your prints will remain brown and leathery, and refuse to tone readily. They will act the same way when the toning bath is too alkaline or deficient in gold.

The photographer's first law—be cleanly.

Buy the best camera-boxes and the best lenses you can afford, and keep them clean and in good order. They are the cheapest.

Keep the dust out of your camera; your lenses clear; wipe the dark slide out often; keep your ground-glass in place when not exposing, and your lens capped or covered.

Do not waste your money on every process-adventurer that comes along. The most successful photographers are producing their results by well-known formulæ. Why spend your money for those you know nothing about? Ask your Journal first.

Never use anything damp to give the final polish to the plate. Pass a broad camel's-hair brush over the plate just before pouring on the collodion.

If you wish to intensify, first wash off all traces of the developing solution.

After varnishing a plate, keep it horizontal a few seconds before pouring off, to give the varnish time to soak in.

Never feel too wise to learn, and never refuse to communicate when you are applied to for information. What can you possibly gain by withholding from a neighbour in trouble?

"It is good enough" is a bad adage.

If you think you can improve by making a second sitting, by all means do it before your subject leaves your room.

Now, finally, in order that you may know when you are in error, and why; when you fail, and why; when you succeed, and why; to be live, wide-awake, posted in your business, successful, and prosperous, subscribe for some live photographic journal devoted to the best interests of your craft. Tell it your troubles; communicate to it what you find out of value; support it and encourage it, and never be without it.

Correspondence.

ORIGIN OF THE COLLODION PROCESS.

Sir,—Amidst much that has been interesting, and a little that might have been avoided, in reference to this controversy, it seems to me that there are one or two things which, if we knew and had proof of, would go far to settle the matter.

Mr. Tunny has said, or it has been said for him, that he used the collodion process of Le Gray in his public practice before the publication by Archer. At what time did Mr. Tunny begin business as a photographer? Where was it? What process or processes did he work? What pictures can he point to as taken by him or others by any collodion process before the publication by Archer? If collateral and irrefragable proof—not assertion merely, but proof—be adduced by him, more especially if he can now point to any negative containing the proof, or person who knows of it, then we must, in the true spirit of fair play, award the palm to the true discoverer, and the bays to his best interpreter. If proof of this nature be not forthcoming, then we can only fall back on the published evidence, and on that part of the subject most people have, by this time, made up their minds.

Mr. M'Craw's positive statement that he taught Mr. T. may be fairly put against the latter's assertion that he used collodion in his public practice long before. If this latter were so, would not most men have said, in such a case, Oh, but Mr. M'Craw, this of yours is not so new as you think! See, here are pictures produced in the same manner, and here are the chemicals I have used in the taking of them. And a comparison of notes would at once have ensued, because, at that time, everybody was alive to every new discovery, and anxious to hear of and know about it. Mr. Tunny should, for the benefit of those who are not *au fait* in the matter, give the facts and proofs circumstantially. A new generation has arisen. Enquirer.

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* "Photographic Mosaics."

COMETS.

Dear Sir,—In the article on "Comets," and the trouble occasioned by them, by John C. Browne, from the *Philadelphia Photographer*, it concludes with: "For the future all my dipping baths shall be made of gutta-percha, *or glass*, &c." Let me advise him and all who are in like trouble to decide upon using glass; they are decidedly the most cleanly, and do not require to be emptied and washed every day, as Mr. Browne states is his practice. I have used them for several years, and have saved much trouble thereby.—Yours truly, Buchanan Smith.

Blackheath Park.

MR. BLAIR'S THEORY OF ACCELERATION.

Dear Sir,—Is there anything in the following fact (often observed by me, and possibly by many of your readers), to clash with the theory lately raised on Mr. Blair's experiments, of the reducing action of light, during a second and general exposure on those parts only that were first impressed? Take a plate on which an image has been developed, and, whilst covered with the developer, gradually from the dark room into the open daylight, and watch the effect. It is perhaps best noticeable in a photo-crayon transparency.

The reduction commences invariably on those parts before most shielded from the light, which show quite a thick deposit before any action of importance goes on upon the half-tones. In the case of the vignetted transparency, there is an oval ring of brown reducible silver, enclosing the image and its margin of yellow iodide of silver, where, though no picture had resulted, some faint pencils of light had reached. Of course the whole gradually blackens, but this is its condition at one very marked stage.

Whilst writing, can you suggest the cause of the semi-opalescent appearance of films that are fixed after drying? It has occurred to me that it may arise from the physical condition of the collodion, which has become, as it were, honeycombed by the abstraction of the particles of iodide and bromide that it had closed on in drying.

Yours truly, R. H. P.

Proceedings of Societies.

Amateur Photographic Association.

A council meeting of the above Society was held Wednesday December 15th, at 12, York Place, Portman Square, Col. the Hon. D. F. de Ross in the chair.

The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—

Capt. John Board; Capt. F. M. Allen; Malcolm Edgo, Esq., R.N.; Col. Sir Henry St. John Halford, Bart.; T. Sopwith, Esq., F.R.S.; J. G. Nichols, Esq., F.S.A.; W. M. Charnby, Esq.; T. Walton, Esq.; J. E. Madden, Esq.; T. Higgin, Esq.; W. Cayley, Jun., Esq; Percy Mortimer, Esq.; D. R. Morier, Esq.; C. Sylvester, Esq., M.D.; Nator Bond, Esq.; Lawrenco Baron, Esq.; T. W. Parker, Esq.; Miss Dora Blencoo; F. W. Mitchell, Esq.; J. C. Waterhouso, Esq.; Jno. Turnly, Esq.; W. J. A. Grant, Esq.

The Secretary then reported that, partly owing to the large increase of negatives over those of any previous year, and also from the members generally having been later than usual in sending their plates, the awarding the prizes had been delayed until this late season of the year.

This led to some discussion as to the expediency of appointing a fixed date, after which no more negatives might be received. And it was proposed by the Chairman, seconded by Dr. Arthur Farre, and decided by the meeting, that in future years no negatives should be received after the 1st of November.

The Secretary then laid before the meeting the pictures contributed by the members for the current year, which greatly exceeded in number those of any previous occasion; and, after an examination which lasted several hours, it was found impossible to do more than arrange the pictures in three classes; viz., Class A, from which the prize pictures were to be selected; Class B, from which the certificates of honourable mention might be chosen; and Class C, which comprised the remainder.

Mr. Glaisher was then asked if he would be able to devote sufficient time to arrange the pictures according to their respective merits, and prepare a report upon them as he had done in previous years.

This he kindly consented to do, and the meeting was then adjourned until Thursday, the 23rd inst.

A. J. Melhuish, *Hon. Sec.*

Talk in the Studio.

Appeal to Photographers.—Our readers will find an advertisement with this heading in our business pages. The gentleman whose threatened blindness renders the sympathetic aid of photographers more fortunate than himself necessary, has occasionally contributed to our pages under the *nom de plume* of "A Practical Man," and has been, we understand, an occasional contributor to other journals connected with photography, and other branches of science and art. The vicar of Tintagel, who will receive subscriptions, speaks highly of the merit and need of the gentleman in question.

Coffee Dry Plates.—Mr. Morgan, of Bristol, an experienced dry-plate man, says:—"I find the coffee process as efficient as it is simple, but the sooner after exposure the plates are developed the better are the results. And the rapid rectilinear lens of Dallmeyer, under favourable circumstances as to season and weather, does capitally for out-door portraiture or a wet plate; and very well for the introduction of persons in a landscape or a coffee plate, provided the full aperture be used."

Cabinet Portraits with Natural Backgrounds.—Mr. Baynham Joues writes to us as follows:—"In your notice of the proceedings of the South London Photographic Society you state that *I* 'exhibited some very fine cabinet portraits with natural backgrounds, and backgrounds after the manner of Mr. Edge, which were much admired.' Now it would appear from this notice that these portraits were my own production. I am very loth to appropriate what justly belongs to another. 'Honour to whom honour is due' is my motto. They were, as stated by me at the meeting, the work of Capt. Tod, a very clever photographic artist of this town. Your insertion of this in your next number will greatly oblige." The error was an oversight in preparing the report.

Under-Exposed Negative Reducing by Means of Cyanide.—A correspondent says:—"Who would be heterodox enough to say that the best thing to do with an under-exposed and over-intense negative is to continue to develop for the shadows, disregarding the intensity, and afterward pull down the latter by strong cyanide? The popular idea is that cyanide affects (eats out) the half-tones in a greater proportion than the high lights. This is true of a positive on glass, and also of a negative where the image is 'soft' through an earlier stopping of the development than its completion; but in my own practice I am able to affirm that the loss of intensity in the high lights in a fully (hard) developed plate is *double* that occasioned to the half-tones and shadow portions, so that I consider it an axiom that this reducer is invaluable for obtaining harmony where deficient from November fogs or other causes that tend to exaggeration of light and shade."

Falling in Love with a Photograph.—Minnesota (says a New York paper) was lately the scene of a marriage with a romantic origin. A lady who had been a teacher in that State married a missionary and went out to India, carrying out with her photographs of friends and acquaintances. A young British officer of her acquaintance was looking over these pictures one day, and was struck with the appearance of Miss Jennie Shaw, of Lakeland, Minnesota. He opened a correspondence with her, and they were at last engaged without either having seen the other. He has since come to this country, visited the lady, and they, being mutually pleased, were married a few weeks ago, and have gone to Europe.

Carbon Prints *v.* Wood Engravings.—The *Standard*, reviewing a work illustratyd with carbon prints and engravings, says:—"It is illustrated partly by wood engravings, partly by autotype photographs, and there is no comparison between the merit of the two methods. The engravings, though good enough in their way, are coarse and ineffectual in comparison with the well-toned photographs that almost equal them in number, and render the book a little treasure-house of copies of Italian art. But even here we do not get quite up to our idea, for the photographs are taken, in the majority of cases at least, not from the paintings, but from famous engravings of them. We are perfectly well aware of the difficulties that are to be met with; but as it is obviou that a carbon print from a picture would exceed in value a carbon print from an engraving of that picture, we trust an effort will be made in all cases in future to give us not merely permanent prints, which is something, but prints taken direct from the paintings, which is better."

To Correspondents.

⁂ Our Year-Book for 1870. The Year-Book of Photography and Photographic News Almanac for the forthcoming year will be ready in a few days. It will comprise all the features which have now for so many years made this work the indispensable annual to the photographer. A full statement of every novelty, a re-statement of every important process into which modifications have been introduced, and much other matter of interest, will be found in its pages. Besides the work of the Editor, contributions from the following gentlemen will be found in its pages:—Mons. Adam-Salomon, Mons. de Constant, Dr. Vogel, Dr. Van Monckhoven, Col. Stuart Wortley, Col. Greenlaw, Dr. A. Anthony, Messrs. Mayall, Mudd, Robinson, Hughes, Blanchard, England, Dallmeyer, Cherrill, Woodbury, John Spiller, Swan, J. R. Johnson, Bovey, Russell Manners Gordon, O. G. Rejlander, J. G. Tunny, W. H. Davies, S. Fry, J. Werge, H. Baden Pritchard, G. Wardley, G. Washington Wilson, Wm. Blair, Alfred Hughes, J. M. Burgess, R. Slingsby, F. Eliot, F. W. Hart, E. Cocking, B. J. Edwards, T. Gulliver, G. Croughton, C. Pearce, J. Lothian, B. Wyles, and other gentlemen.

Amateur and Subscriber.—We regret to say that Mr. Gordon's charming landscapes are not published, and are not procurable.

E. Elgar.—When you speak of transferring a print to wood, do you mean a photographic print, or an engraving? There is no means of transferring the image of an ordinary photographic print to wood, but various modes of photographing on wood. If your question refers to an ordinary engraving, you will find an article in the News, a month or two ago, on the subject.

N. Clay.—M. Albert's address is Munich.

X. Y. Z.—The print is on ordinary albuminized paper, and the enamel glaze is produced in the manner we have frequently described by means of gelatine and collodion: we mean the process in which a plate of glass is coated with plain collodion, dried, coated with gelatine, the picture applied wet to the gelatine, dried, and the whole finally removed. You will find the method fully described in various articles in our Eighth Volume and in our Year-Book for 1865. The appearance of purity in the whites is due to contrast of the intense black of the border.

R. S.—In order to reduce sulphide of silver satisfactorily, it is desirable to roast it first. It is exposed to a bright red heat for a quarter of an hour upon a shovel. It is then mixed with the flux, which may consist of an equal bulk of mixed carbonates of soda and potash, or the latter and nitrate of potash, and submitted to a very high temperature. 2. The residue should be boiled with dilute nitric acid in a porcelain vessel. An iron saucepan should never be used for such purposes. The proportion of nitric acid cannot be stated, because the amount of iron to be removed cannot be estimated; the amount of nitric acid is not important so long as there is sufficient to dissolve the iron. It is probable that you apply too much heat in evaporating, and produce proto-chloride of gold, or, possibly, oxide of gold. 3. We should not like to trust to a wooden dipping-bath varnished with bee's-wax and resin. If wood be used, it should be lined with pure sheet india-rubber, in very thin sheets.

An Amateur (Devonport).—Various pigments may be used for stopping out scratches, &c., in negatives, as you will ascertain on reading Mr. Croughton's recent remarks on the subject in our pages. It somewhat depends on the kind of negative. For most purposes indian ink answers well.

W. W.—The gradation on the backgrounds of Mr. Robinson and Mr. Blanchard was obtained partly by casting a portion of the screen into shadow by drapery or other means, or else by local intensification. It was not in any case painted on the screen. The latter plan may be employed, but has the bad effect of producing uniformity in all the pictures produced, and being not equally suitable for all persons and positions. 2. For small pictures we like the background somewhat darker than print enclosed. The same artist now employs a darker background. Gradation in a background gives the sense of air and space, and is, therefore, always desirable. 3. As a rule, small pictures look heavy if the general effect is as dark as the class of pictures described as Salomonesque. 4. In vignette pictures the background should not be dark, as, in such case, it is difficult to graduate it satisfactorily into the white margin. It does not need to be dark, as the figure itself should be light and delicate, with less force altogether than a printed-out figure with dark background. 5. The lenses you mention are especially suited for producing soft delicate pictures. 6. As a rule, all the shadows in the flesh should be somewhat lighter than the background. 7. The distance between the sitter and the background entirely depends on circumstances, and the effect desired. The greater the distance the greater the effect of relief, as a rule. 8. Yes; all of the same grey colour. 9. We have not tried it. 10. In washing a negative after fixing, something depends on the size of the plate, and something on the character of the film. As a rule, from three to five minutes under a steady stream of water from a tap will serve. 11. Yes; dark in general character, and the carpet without pronounced character. 12. As a rule, replenishing with a forty-five solution will serve. 13. The india-rubber enclosed appears to be quite pure and trustworthy. 14. The collodio-chloride plate may be dried by heat, face upwards, as you propose. We shall be glad to hear of your success. Print returned.

C. A. Fernely.—Melton Mowbray asks us to insert in our "Exchange Column" the statement that he has a few dozen duplicate lantern slides of Worcester Cathedral and neighbourhood, and Malvern, suitable for solar lamp, which he will be glad to exchange for other slides of interest. We give publicity to his request, but add that we have no exchange list. We have never established one, because we have not been able to see that such a list would usefully occupy our space. If, at any time, a sufficient number of our readers thought otherwise, we shall be glad to meet their wishes by establishing such a column.

A New Subscriber.—We believe that coffee dry plates keep pretty well. How long we cannot, with any certainly, say. Mr. England recently remarked to us that in his experience dry plates by every process in existance began to deteriorate a few days after their preparation, and that to secure really good results they should be prepared, exposed, and developed within a week.

A Novice.—The *Philadelphia Photographer* is a monthly publication, price half a dollar (2s. 1d.) each number. You can obtain it through Trubner, of Paternoster Row.

J. P.—Zinc is less dangerous under the circumstances than lead; but gutta-percha would be preferable. 2. Bichromate of potash and acetate of lead will form an excellent non-actinic dye for fabrics; but any woven fabric, unless varnished, will permit light to pass through the minute interstices in the texture.

W. F. Morgan.—We will convey your thanks to Mr. Spiller. Thanks for note on coffee process.

Devon.—A studio the design you propose may, by a little skill, be made to give good results; but it is not of such form and proportions as we should recommend. The open front will give you chiefly front light, which has a tendency to give a flat face. By covering part of the front with blinds, stopping out all light on west side, and admitting as much as possible on the east, taking care, also, to screen the camera in the garden from light, you may possibly get some good results. The project you propose would be exceedingly costly.

Gratis.—You will find full instructions for working collodio-chloride of silver on opal glass in our Ninth Volume. You will find condensed instructions in our last three or four Year-Books. If these are insufficient, let us know the points whereon you require further instruction.

J. K.—We cannot repeat the instructions here, as they would occupy too much space. You will find details in our forthcoming Year-Book.

J. Turnley.—The plate should not be washed under a tap at all, but simply immersed in a dipping-bath of distilled water. It is possible that the washing under a tap with common water may tend to produce the stains you mention.

J. Foster.—The addition of carbonate of ammonia to the hypo bath facilitates permanent fixation, and we advise its use. 2. Dr. Monckhoven's pillars of carbonate of magnesia are not yet for sale in this country; how soon they will be we cannot state. The address is "Dr. Van Monckhoven, am Schuttel, No. 3, Vienna."

R. H. P.—Thanks.

T. W Martin (Meerut).—Subscription duly received.

⁂ We are reluctantly compelled to defer answers to several Correspondents until our next.

THE PHOTOGRAPHIC NEWS.

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MR. DAVIES' METHOD OF PRINTING ON CANVAS.

We were recently favoured by Mr. Lothian, of Edinburgh, with a sight of some admirable examples of the mode of printing introduced some months ago by Mr. Davies, by which almost any surface, no matter how unsuitable for photographic purposes, gave fine pictures after treating with a sizing preparation consisting of a mixed solution of shellac and gelatine. It was suggested at the time that such a process appeared to be pre-eminently well suited for printing on canvas, and Mr. Davies and others promised to put the matter to the test of experiment. This has been done, and Mr. Lothian, who is well versed in canvas printing, has worked out in conjunction with Mr. Davies for this especial branch, and with such satisfactory results that he has resolved to use none other.

For printing on canvas the chief modification of the formula consists in diluting the sizing solution considerably. The surface of the canvas, primed for printing, being non-absorbent, a much thinner coating of the lac and gelatine solution is desirable, as a thick film might cause some eventual tendency to exfoliation. The formula as originally given by Mr. Davies is as follows:—

Take from four to six grains of gelatine, soak it in an ounce of water for an hour, then melt it gently over a fire, hot plate, or water bath, using a clean earthen pipkin. When fully dissolved, add to it, while yet warm, and stirring it gently during the mixing, from four to six drachms of a solution of white lac in methylated spirit, if for white or pale surfaces; but orange lac will do if the surface be of a darker colour. This is made in the proportion of six ounces of spirit to one ounce of lac, and digesting it till fully dissolved. The mixture of the gelatine and gum lac in spirits produces a creamy-looking emulsion, to which is added four grains of chloride of sodium, or a like equivalent of chlorides of ammonium or barium, and, when fully dissolved, filter through fine muslin into a clean pipkin, and it is ready for use.

This is, we believe the formula still employed for paper with success, and we may remark, in passing, that for paper, a fifty-grain ammonia-nitrate solution gives a rich, velvety quality of picture, which is, in our estimation, much superior to that obtained with the plain silver solution. When the ammonia nitrate is used, a fine, rich, purple brown tone is obtained by fixing in hyposulphite of soda, one part in eight of water, without toning.

In applying the process to canvas printing, the lac and gelatine solution, is to be diluted with an equal bulk of water, or, we should presume, better still—in order to avoid the risk of precipitating any portion—with equal parts of alcohol and water. If the preparation be made for use with canvas, of course it will be made of the proper strength at once; but if the mixed solution have been prepared for paper, it must be warmed, and the proper proportion of alcohol and water added, a little at a time, stirring briskly. The preparation thus diluted remains fluid, and requires but slightly warming for use.

Previous to applying it to the painter's canvas, the prepared surface of the latter is sponged with a little methylated spirit, to remove dirt or grease, and prevent any tendency to repel the sizing solution. When the surface is dry, the lac and gelatine solution is applied smoothly with a sponge. The surface dries in a few minutes. The silver solution is applied with a tuft of cotton wool. We may observe here, that ammonia-nitrate of silver is on no account to be used in exciting the canvas, as the alkali, rapidly acting on the priming of the canvas, would penetrate and dissolve it. The silvered surface being dry, the canvas is placed under a negative and exposed, the printing being more rapidly effected than with albuminized paper. When sufficiently deeply printed, the canvas is turned up at the edges, and secured at the corners by spring clips, so as to form a dish. Into the dish so formed the hyposulphite fixing solution is poured, and suffered to remain about ten minutes.

Mr. Lothian states that by observation he had arrived at a criterion of perfect fixation. When the surface is so thoroughly permeated by the fixing solution that it felt slightly soft and yielding when pressed by the finger, instead of being perfectly hard and rigid, experience has proved that the image is perfectly fixed.

When the image is fixed, one corner of the canvas is released from the clips; and, after pouring away the hypo, the surface is washed for a quarter of an hour by means of a flexible tube attached to the water-pipe, care being taken at no stage of the proceedings to wet the back of the canvas. No toning is necessary, as the image, when fixed only, is of a rich warm purple brown tint, well suited to the purposes of the oil painter.

It will be seen that in this form of canvas photography printing direct from the negative is contemplated; where enlarging is necessary an enlarged negative is used, and a direct print produced therefrom. There is little doubt, however, that by the use of iodides and bromides the surface prepared with the same sizing solution might be made sufficiently sensitive for solar camera printing by development.

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THE PHOTOGRAPHIC EXHIBITION.

Final Notice.

A few final remarks on the exhibition before we close the present volume, which will be completed by the issue of the present number.

The examples of reproductions exhibited were not numerous, but amongst the number were many of excellent quality. Mr. Restall's very large and exceedingly fine photograph of a colossal marble group, representing the Last Supper, comes under this head, but as we have already noticed it we need not comment upon it now. Mr. F. Hollyer exhibited some very fine reproductions of the works of modern painters, the delicate—and, for photographic reproduction, difficult—pictures of Mr. Albert Moore being admirably rendered. Some of the finest reproductions exhibited were amongst the magnificent examples of carbon printing contributed by the Autotype Company, including a grand series of the works of Sir Joshua Reynolds. The perfection of tone, the delicacy and force, which distinguished these works and reproductions from the pictures of various modern painters left nothing to desire, and suggested—if photography be in truth destined to supersede engraving as a means of multiplying works of art—that the results of the newer form of reproduction will be in no wise inferior to that it supplants. The reproduction of Dore's illustrations to Hood's poems by Mr. Jeffrey were very excellent. The issue of these last photographic illustrations affords a confirmation of the remark we have just made on the relative value of photography and engraving. It is the practice of some, in bewailing the decline of the art of engraving, to rail at photography as the cause of that decline; but a somewhat striking argument as to the relative value of the two is found in the fact that the photographic reproductions of Dore's drawings circulate largely at just twice the price of the prints from copper-plates, a fact which speaks volumes for the excellence of Mr. Jeffrey's work as well as the value of photography for such reproduction.

The collection of Albert's prints comprised some admirable examples of the capacity of the process for the satisfactory rendering of different kinds of subjects: portraiture architecture, and reproduction presenting equally good results. Mr. Woodbury's process was only represented by a solitary specimen. This was to be regretted, as many of the examples we have seen of late have been exceedingly fine, and scarcely to be distinguished from very fine albuminized prints. Mr. Dallas exhibited some examples of his block-printing process, which possessed much excellence, and illustrated the capacity of the process for many kinds of work. He also exhibited a portrait burned in on porcelain, having been printed apparently in ceramic ink from one of his photo-electric engraved plates. This example was not perfectly satisfactory, but there is no reason why the method should not be altogether a success.

There were not many enlargements exhibited. The best were life-size untouched prints on albumiuized paper produced by Mr. Mayall. For a moderate amount of enlargement nothing was more satisfactory than the transferred collodion prints of Mr. Gillo. Mr. Window's enlargements in carbon were also very excellent, the retouched copies possessing the highest qualities. An enlargement of a dog, by Mr. Frank Briggs, was exceedingly good.

The number of coloured photographs exhibited was not so great as at some former exhibitions, but some of the examples were of the highest excellence. Nothing could be finer, in water-colour, than the exceedingly beautiful specimens of Messrs. Lock and Whitfield, some of which were on tablets of ivory in size twelve inches by ten. Many of the specimens by this firm were painted on carbon images, thus securing the highest permanency in combination with the best artistic finish. Mr. Mayall exhibited some admirable examples of coloured work. A life-size portrait of Mr. Reverdy Johnson, coloured in oil, was very effective, but suffered somewhat from close examination, having been painted to be hung in a lofty position in a large hall. Portraits of Tennyson, Peabody, Disraeli, Gladstone, and others were exceedingly fine, some being finished in oil with the minute care and delicacy of miniature painting. Mr. Monnickendam, Mr. Warlich, Mr. Hooper, and others exhibited good coloured enlargements.

Mr. Arthur Taylor exhibited eight landscapes, about sixteen by twelve, executed by the shellac and borate of silver process. These prints are on drawing-paper, and some of them from paper negatives. Nothing could be finer and more artistic than the tone and general quality of these pictures, and experience gives strong assurance of their permanency, prints in existence for five years showing no trace of change whatever.

The display of stereoscopic pictures was not large, but it included some excellent examples. A fine display of Breese's marvellously beautiful glass transparencies were shown in stereoscopes, and excited much attention. Pumphrey Brothers had a frame of glass transparencies. Mr. England's stereo views of Switzerland and Savoy were, as usual, charming. Mr. F. York exhibited some fine stereo views, including some good London scenes and capital studies of animals. Mr. Frank Howard also exhibited some excellent stereo landscapes.

On the tables—besides albums containing some capital cabinet portraits by Reutlinger, and photographs illustrating the Ordnance Survey of Sinai, by Col. Sir H. James—were some examples of apparatus, the most noticeable of which was a camera, exhibited by Mr. C. E. Elliott, the invention, we believe, of Mr. Cooke. It is intended to contain a series of prepared dry plates, which can be exposed in succession without any changing-box, an ingenious contrivance existing for the displacing of the exposed plate and supplying its place by a fresh one as required, thus reducing the impedimenta of the photographic tourist to a minimum.

Amongst the contributors whose works not calling for detailed notice, or for which we have not space to dwell at length, we may mention Mr. Dixon, whose photographs of the progress of Holborn Valley improvements are excellent and interesting; and, next, Anderson, whose photographs of bridges, rafts, &c., afford interest of illustration of the value of photography in military science. Mr. T. Davies, whose collodio-albumen pictures were excellent; Mr. Dunmore, who exhibited some capital landscapes and some *genre* pictures; Mr. Jewell, who exhibited some very fine studies of animals, as well as good landscapes and portraits; Mr. Rump, who exhibited some fine pictures by the gum-gallic process, as did also Mr. W. J. A. Grant; Mr. W. D. Clark, whose views of Edinburgh Castle by the collodio-albumen process were exceedingly perfect; Mr. Nichols, who exhibited good views of Dunster Castle; Mr. Morgan, whose landscapes are always good; Mr. Lemenager, who showed fine views of St. Alban's Abbey; Mr. Mitchell, who exhibited some good landscapes; and a few others.

THE PICTURE AND THE PROCESS.

Part II.—"Stolen Moments," How Produced.

BY W. T. BOVEY.

To an observer whose allegiance to the cause of progress is grounded on a broad and comprehensive view of what *might* be, it is interesting to note the obstructive idiosyncracy which a large majority of mankind exhibit, to whom plans wholly practicable are seeming impracticabilities, as viewed by narrow prejudice. To such short-sighted ones difficulties like mountains rise, which cause the past to become a dead letter, the future a scene of retrogression, and the present a climax to perfection.

Happily for the cause of progression, there exists at all times the stern minority who can laugh at impossibility, whilst their great wills are placing nature in subjection. Were it not so, "Chat Moss" would, to this day, have remained an untamed bog, and the Red Sea would never, by the labour of man, be brought into union with the Mediterranean.

Scepticism is as often the offspring of prejudice as of ignorance. In either case, when an opinion is once expressed, egotism, in its heart of hearts, sighs and longs for the accomplishment of its prophecies. Hence it is that its hopes fight against hopes, and adverse realizations are fought and grappled with as long as a nail can be found whereon to hang a doubt.

For an example to illustrate these arguments I turn now to photography.

When it was told in France that one of her sons had succeeded in fixing an image that was produced by solar light, doubtless there were many who believed that the world was going mad. But when the discovery could no longer be denied, art took a reluctant cognizance of its offspring, by promising for it a feeble existence and a dreary end. As time sped on, the bantling grew apace; but art critics still pooh-poohed, and thought its growth deceptive. Photography still grew stronger, and became a huge industry. Art censors looked grave, and sarcastically alluded to shoemakers and tailors as the young one's sole supporters. Exhibitions of the infant's giant power were inaugurated. Art critics came and viewed; still the tale they reiterated, "This is not art." So years rolled on, and the new scion of art struggled on, until the year 1869 is marked as an era of hope to photography from the fact of a tardy acknowledgment having been conceded by the reluctant critics of the press that, after all, there is something in a photograph. "Not art, you know," but a *tableau vivant*, the finest example of which is said to be the subject of this paper, viz., "Stolen Moments." And the chief reason why the picture named has forced from prejudice an approving though qualified verdict is on account of its being a first success in the many attempts that have been made to break through the barrier of exclusiveness which has hitherto separated photography from recognized art. Of "Stolen Moments" it might truly be said that it has stolen a march on the accredited artist's domains. A ray of comfort for the defeated ones might, however, be extracted from the fact that the conqueror is no "outsider," but, to all intents and purposes, one of themselves; for in the year 1867 Mr. Hubbard's little picture was hanging side by side with the proudest efforts of the painters who were privileged to exhibit their works in the Hall of the Royal Academy.

Ere I proceed further, let it be distinctly understood that my eulogy on "Stolen Moments" does not imply that perfection is achieved. So far from my entertaining such an opinion, I have reason to know that Mr. Hubbard is capable of greater things. The impression I really desire to convey is the fact of "Stolen Moments" being the first actually successful attempt to give to a photograph from nature the semblance of a painting. And I hold that the verdict passed by the hasty looker-on, "A copy of a painting," is a full proof of my assertion. I am, of course, well aware that photographic art efforts have limits unknown to the painter; these I shall have occasion to remark on when a seasonable occasion presents itself; at present I proceed to quote remarks, offered by Mr. Hubbard, which contain the pith of that gentleman's guiding action when he attempts to make a photograph a work of actual art. "I conceive and carry out my design by a method as nearly as possible as I should adopt were I about to paint instead of photographing the picture." The meaning of this remark is just this: Mr. Hubbard brings his natural art feeling, and the art he has acquired from education, to bear on the conception which assumes the form of a design as it is sketched on to paper. Turning, then, from art to architecture, the artist becomes in turn a general Jack-of-all-trades, as I shall show by-and-bye; before doing so, however, a brief description of "Stolen Moments" as a picture must be given. The leading portion of the composition represents an humble cottage apartment, which receives light from a window laterally situate. Near the window a young girl in rustic attire is gracefully posed. She stands with her feet carelessly crossed, her body being well supported in an easy and natural position by a house-broom, which lies idle, and, apparently, forgotten, so intent is she in her enjoyment of those "Stolen Moments"—sweet, because stolen. Far sweeter are the contents of that love epistle which speaks of constant love. The form of the young peasant girl is partially repeated in shadow on the wall behind her—shadow outlined so true to nature, because by nature drawn, that a learned critic, more versed in art than nature, has pronounced the shadow touched. A glorious compliment this assertion pays to photography, which gives a picture of life as well as art. Near the spot occupied by the principal figure, a partially open door reveals an inner room, wherein is seen seated a portly matron, on whose lap lies a chubby child, which forms a connecting link with a cradle most cunningly placed near the doorway I have alluded to as being placed in the front room. The cradle joins the darker portions of the picture, which give brilliancy and force to the composition; and the lighting of the inner apartment is so adroitly arranged, that the splitting up of the picture into two parts is prevented by a cleverly devised union between the light that spreads over both chambers. The accessories are of the most simple kind.—such as a plain round table; a few odds and ends placed on a shelf overhead; one or two articles of clothing, which play a part I cannot describe, to be serviceable, except an example of the picture was before the reader; an unframed print; and in the inner room ticks unwearyingly by the "old Dutch clock." These are the make ups which have been made into the finest composition picture that photography has yet produced. In a word, if my readers would wish to purchase the lot of accessories, Who bids ten shillings? "Ten and six," say you? 'T yours! Make the best of them whilst I make the best job I can in describing how my modest friend, the artist, went to work to produce the picture which was literally the production of moments stolen from every day's ordinary routine.

In the execution of my task I must inform all concerned that my friend's studio is perched up among the chimney pots which overlook the busiest haunts of Oxford Street and High Holborn, and which underlook the murkiest and most smoke-begrimmed atmosphere that ever caused a photographer to wish himself a cobbler. Hemmed in by frowning stacks of brickwork, and partially buried in parapet walls, Mr. Hubbard's studio nestles as congenially as would a gentle pigeon in a soot bag. The glass house was constructed to fit the position, and a most wretched position it is. Our artist, however, is a man not to be appalled by trifles, so he, with the aid of some ingenious blind arrangements, manages to pursue the tenor of an even life in taking all who chose to be taken by him, and, when not engaged in taking portraits, painting, printing, &c., occupy the fleeting hours.

Now I would describe the curtains, and how they are worked; but I should be moving out of my story, for "Stolen Moments" was taken at the other end of the room, where the top light is not, and curtains are not needed. In setting up the requisites of a picture, Friend H. reminds one of Master Nickleby when he wrote dramas and tragedies to suit the pots and tubs that formed items of "properties," for the design was made to suit the position of the room, but the solid accessories were placed by the hands of the artist. The first negative contains the front room I have described; also the door, which is *not* a common door, such as an inartistic carpenter would have produced. It is, however, a new door manufactured by the artist himself, whose skill in handling the hammer, saw, and chisel is very remarkable. To give the new wood an appearance of great age and wear, the paint brush was brought into requisition, and a very decent graining job was executed. The walls are of plaster. The skilful paint-brush makes fissures and other dilapidations. The doorway is a blank, which in the picture is occupied by the inner chamber. To produce the latter, a careful calculation was necessary, to prevent a realization of Hogarth's "Outraged Perspective." The calculation was made in order to determine the dimensions of the figures the most distant. These were taken in the glass room at the glass end. I say glass end, because the lateral window, at the further end at which the principal portion of "Stolen Moments" was produced, is the only source of light; hence the cause of those exquisite cast shadows which give pictorial value, and deceived the jealous eye of an art critic when he viewed them. The scene outside the window was painted by Mr. Hubbard. The exposure was, of course, long. Taking art-photographs among the chimney-pots, on a not over fine day, is no joke. Lens, a French one (focal length unknown to me), silver bath, collodion, developer, bath,—I will not degrade the subject to speak of these; they were as *all* know, or *should* know; none need telling. The printing was executed on the principle of registration similar to the method adopted by Mr. Robinson. First, the chief feature of the composition is printed; next, the inner chamber window, &c. The whole is executed in two printings, and nothing is left for subsequent dodging, as the print leaves the negatives finished. With the exception of a few touches to strengthen the lights, the negatives are, I believe, untouched. As the preliminary work proceeded, a small carte-size negative was taken from time to time, and the alterations they suggested were subsequently made.

And now, in conclusion, I would observe that none but those who possess art culture, and photographic skill and art feeling can hope to follow in the wake of Mr. Hubbard. There are, however, many whose time would not be lost in trying. There are, doubtless, some who would succeed. Such works, I must add, take up much time in their execution, and to most, time is money. But cannot something be done to encourage those who have laboured for love of the art they practise? The London Society have wisely given up the distribution of medals, but could they not institute a photographic art union, which would not only encourage efforts at producing works of art, but would also be the means of placing into the hands of subscribers copies of works of which many, under existing rules, can know nothing more than they glean from the pages of the journals devoted to photography? The machinery for a lottery on the art union principle is most simple. The producers of good pictures would be but too happy to sell copies of their works, and the public, I am sure, would be glad to buy tickets; we only require the influential movers Who will step forward? Who will aid in pushing forward art and art photography?

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TRANSFERRED PRINTS FOR MAGIC LANTERN.

BY J. MARTIN.

Understanding that the process of transferring upon glass was required for the purpose of preparing slides for the magic lantern, a few observations as to its eligibility or otherwise for that purpose may serve to prevent an expenditure of time and labour in a wrong direction by those who would attempt it.

Let it be asked, what is the advantage sought to be gained by this practice? Merely an easy method of obtaining the outlines and shadows of subjects on glass suitable for slides. Can they be so obtained with advantage? Lithographs of this description are seldom to be found on sale of the proper dimensions for lanterns of the usual size, and, as large ones are cumbrous and costly, such would not be purchased merely for this purpose; therefore a special class of lithographs would have to be produced, of which, unless a large demand arose, the variety would be very limited, and, if well executed, would be expensive. When procured they would have to be transferred upon the glass, which would require time and care, while the grain of the stone, the chalk of the artist and the grain of the paper, the thickness of the transfer varnish, and perhaps some errors of manipulation, would only allow of a very coarse and mediocre effect as the product of this roundabout, troublesome process. I have frequently seen attempts in this direction, but all have been comparatively failures. Even photographic transparencies have to be well chosen, and well executed, coloured, and made effective by some experienced artist, especially for this purpose, before they can compete with well finished painted slides, and then require a much stronger light to exhibit them to advantage.

The ease with which photographic reproductions are produced has caused quite a revolution in the lantern slide trade, deluging the market with worthless trash, copied from engravings of all kinds without the least respect to their suitability for the purpose or not, and in many cases not worth the few pence asked for them. Through this false appearance of cheapness, the prices of good work are so reduced that artists of ability will not give their time for the paltry remuneration offered, and, in consequence, are giving up the practice, so that ere long it is likely that there will be no good painted slides to be purchased, for to produce such requires much experience and long practice, as the process differs much, in many respects, from other branches of painting. It is very injurious to the sight and health, and, therefore, should be at least fairly remunerative. I consider photography the best means of reproducing designs for the lantern in cases where the sight of the artist may be weak, or his capacity as a draughtsman but limited, but wood, steel, and copper engravings should not be reproduced entire, as their lines, being so highly magnified in the lenses of the lanterns on the screen, gives them the appearance of bars of iron, thus spoiling the effect of the sky and water. In these cases it will be much better to have a large outline only on paper by means of a pantagraph, reducing this on the glass by photography; thus any slight error in drawing would not be observable, and the shadows and colours can be much more effectively put on at once by hand; these, being transparent, will only give a moderate light when exhibited. But even by this very method it will be found that there is no royal road to good painting, but that the artist must possess a certain amount of experience, for although he may have a highly effective and beautifully coloured subject as a copy, yet, unless he has gained the facility of dotting in a sky, taking out the lights, he cannot hope to produce a fair specimen of any painting. A moderate share of application will soon alter all this, and I am sure the student will have found his time thus spent much more profitably employed, and with far more gratification to himself, than seeking to lean to such a treacherous crutch as any transfer process may prove.

While writing upon the accessories of the magic lantern, I may notice a proposal I have seen for changing the pictures in the double lantern by shifting the light from one condenser to the other, for the purpose of only using one light. I should say that the proposer was not a practical man, otherwise he would be aware of the effect produced should the light ever happen to be placed out of the centre of the lenses. This method cannot be called dissolving, as this effect is produced by the union of the two pictures, both equally lighted, but one disappearing, the other appearing in its place. No effects could thus be shown, as they also each require their own separate light; and when using gas I should fear that the necessary motion would endanger the light being put out. A better effect may be produced with a single lantern, thus: arrange a number of square slides in a long frame, grooved like a boy's slate frame, side by side; after having shown No. 1, gradually put the lenses out of focus, at the same time gradually obscuring the light by a piece of deeply coloured glass; shift No. 2 into the front of the lenses, then gradually focus it, at the same time as gradually withdrawing the coloured glass; repeat as often as necessary.

114, *High Street, Ilfracombe, Devon.*

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Correspondence.

ENLARGING NEGATIVES.

Dear Sir,—Dr. Van Monckhoven, speaking of "indirect enlargements," says:—"A positive taken in the camera by the wet process is always flat, hazy, and wanting in sharpness." I have not found this to be the case, and consider there is an advantage in taking the positive in the camera, as it may be taken a little larger than the original negative. I do not think that a really sharp negative can be taken of a large size direct from the transparent positive, the "carte-de-visite" size, because the structure of the collodion must be magnified, and, consequently, the lines will be broken, and not sharp at the edges; but if we take the trouble to repeat the process, that is, to take from the original negative a perfectly sharp positive in the camera, which I know can be done, rather larger than the original, and from that a perfectly sharp negative, still larger, and then repeat the process until the sharp negative, the required large size, is obtained. I think the enlargements would be successful, as by that means the structure of the collodion would not be sufficiently magnified to make the lines unequal in depth, and uneven at the edges, which, to me, appears to be the great fault in enlargements.

There are many difficulties, no doubt, to be overcome in order to arrive at perfection in enlargement, but I see no reason why a perfect copy of the original should not be obtainable. If we look at the wonderful enlargements (for they are enlargements) that Dr. Maddox has taken of microscopic objects, we see what perfect sharpness can be obtained from a perfect original, and immensely larger in proportion to the original than would ever be required from a "carte-de-visite" negative, or from a landscape of the same size. The enlarging camera could readily be made with false fronts to slide in, having apertures in which to fix the different sized plates, such as I described in your First Volume "for taking enlarged positives from small negatives."—I remain, dear sir, yours very truly,

Thomas Barrett.

Mead Vale, Red Hill, 28th December, 1869.

Proceedings of Societies.

Edinburgh Photographic Society.

This Society held its third meeting of the session in the hall, 5, St. Andrew Square, on Wednesday night, the President, Sheriff Hallard, in the chair.

A paper was read by the Hon. Secretary, Mr. W. H. Davies, on "An Efficient Method for Enlarging all kinds of Photographs," in the course of which he explained the various methods presently in use, showing where the proposed method was an improvement upon them. The paper was illustrated by the various pieces of apparatus, the mode of using which was explained.

Remarks were made by several of the members corrobative of the positions advanced in the paper.

Mr. Wharton Simpson had sent a number of very fine examples of a new method of printing photographs in permanent printing ink, the work of the inventor, Herr Albert, of Munich, for examination, and their exceeding beauty excited the admiration of the meeting.

In the course of conversation as to the method by which they were produced, the Secretary stated that he believed the method was roughly stated something like this:—A piece of very thick plate glass was coated with a solution of gelatine, to which had been added a portion of bichromate of potash. This on being submitted to the action of light, was hardened and rendered insoluble in water. A second coating was now made, and on this the photograph was printed, and after thorough washing out the unaltered bichromate, the plate was treated in the press very much as a lithographic stone, and so printed. He further stated that this was by no means a new invention or idea, as he as well as others had worked at the same idea, but without getting the same perfect results as those now shown.

Mr. W. M'Craw stated that he also had many years ago made experiments and obtained certain results, but the difficulty of the impression always inking up came in the way of perfect success.

Mr. W. D. Clark stated that there must be some difficulty in the way, as on enquiring in Berlin, where a similar process was being worked, as to the production of pictures commercially, the answer received was that they were prepared to teach the process, but not to work it or produce work commercially.*

A number of the examples were distributed among the members.

Thanks having been voted to Mr. Davies, Mr. Simpson, and others, the meeting adjourned.

Talk in the Studio.

Mr. Robinson's "Pictorial Effect."—The *Standard*, in a recent review of Mr. Robinson's book, says:—"Photographers now-a-days so largely increase the attractiveness of Christmas books that it seems only fitting they should have one to themselves. Although not designed to take a place among the ephemeral publications of the season, Mr. H. P. Robinson's excellent book *Pictorial Effect in Photography* (Piper and Carter) is here noticed, because its author, himself one of the foremost of English photographers, has had the volume produced in a style that renders it fitting for a drawing-room table book. But it is something very much more than this. Mr. Robinson has faith in the effectual combination of art and photography—nay, he ever succeeds in combining them in his own work, and he has prepared this volume to teach to others 'those guiding laws in composition and chiaroscuro which must in all forms of art be the basis of pictorial effect.' It is not too much to say that in the present state of photography the book is simply exhaustive. Whether Mr. Robinson treats of landscape, or portraiture, or light and shade, or composition, he is equally clear and excellent. The veriest tyro in photography cannot fail to comprehend the instructions here so lucidly laid before him, and he must be dull indeed if he do not profit by them The illustrations, photographic or engraved, of which the book is full, are in themselves all that could be desired. Mr. Robinson does not claim too much for photography. He knows from his own practice that it has its limits, but then his book is intended to extend the bounds of its utility. We have every confidence that the aim of the author will be achieved. Artists as well as photographers will benefit by a study of the chapters on composition, and to a member of either of these large classes there could not be a better or more useful Christmas present than 'Pictorial Effect in Photography.'"

A Romantic Marriage.—A young German, while visiting the house of a married lady in California, observed a photograph of her sister, a Miss Rowe then living at St. Austell, Cornwall. He was charmed, and two days afterwards wrote to the young lady, avowing his love and offering her marriage. The reply was favourable, and he then forwarded a liberal sum of money to defray Miss Rowe's expenses from Cornwall to California, adding that should she, on arrival, be unfavourably impressed, he would not hold her bound by either law or honour to except his hand. Within the last few days Miss Rowe's mother at St. Austell has received a letter announcing that the nuptial knot had been tied.

Tanno-Gelatine Developer.—We recently quoted from our *Philadelphia* contemporary a developer by Mr. Anthony, upon which we remarked, at the time, that some error in proportions apparently existed. Mr. Anthony, in the last number, writes as follows:—"In a recent number in this column you gave an incorrect description of the mode of making the developer which I recommend. The first time I made the developer, it was compounded as follows. I made two solutions, one of Cox's gelatine, ten grains to the ounce of water; the other, fifteen grains of tannin to the ounce of water. Into an ounce of the former, while warm, three drops of the latter were put, and then the gelatine solution was thoroughly shaken, and the precipitate redissolved. This latter compound was then used to add to the developer—one drop of it to an ounce of the ordinary iron developer. The addition of this small quantity of organic matter has a remarkable effect, and produces a developer which should be extensively used. It it very economical, as the same developing solution, by filtering, can be used over and over again. In cold weather it is important to warm it slightly before using it. It is evident that the same materials may be mixed in other ways, and in different proportions, but I have never found any combination better than the first experimental one."

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* The process worked in Berlin, Herr Albert informs us, is an early and imperfect process of his own, incapable of producing many impressions. Hence, probably, its unfitness for working commercially.

Ammonia in Water.—M. Chevreul in the *Comptes Rendus*, points out that, as far back as the year 1811, he (M. Chevreul) found ammonia in all waters, however carefully distilled, and, besides this, he found it invariably to contain alkaline silicates, derived from its action upon glass, which is, even at comparatively low temperatures, acted upon by water. The eminent *savant* states that the bottles in use in his laboratory are made of green glass, which does not contain lead, and is better fit to resist the action of water, as well as of chemicals.

Testing Glue and Gelatine.—Mr. A. Bird, in the *Chemical News*, says:—"I add a test for the goodness of glue, which I have found very valuable. Assuming that 'that' is the best glue which will take up most water—Take fifty grs. of the specimen, and dissolve it in three ozs. of water in a water-bath. When dissolved, set it by for one hundred and twelve hours, to gelatinize; then take a one oz. chip box, place it on the surface of the gelatine, and put 'shots' into the box, till it sinks down to a 'mark' on the outside. It will be found that the stronger the glue the more shots it will take to sink the box down so that the mark shall be level with the surface of the gelatine. In a trial with Mitchell's glue, which is made here, and is the finest I ever met with, fifty grs. of glue dissolved and gelatinized, with three ozs. of water, supported. to the mark on the box, six ozs. of shots, at a temperature of 58° F. On trying the same experiment with best Russian isinglass, fifty grs , dissolved in three ozs. of water, supported nine ozs. of shots, the temperature being the same. Russian isinglass, therefore, is one-third stronger than glue in gelatinizing power; but, as Russian isinglass is worth £84. and best glue is worth but £3, the cwt., there is no fear that the former will ever supersede the latter,

Effects of Sunlight on Plants.—The experiments that have been made from time to time have been made to determine the effects of light and absolute darkness. But some recent experiments by M. Prillieux have been made to determine the effects of light of different intensities. In former experiments sunlight was weakened by being received through water or glass shades, and the results were therefore liable to be modified by the absorption of rays. To avoid this, M. Prillieux, by means of a heliostat, caused a cone of light six metres in length to fall into a dark room, and he then placed a series of five pots. each containing barley that had been reared in the dark, within the luminous region. No. 1 was placed at a decimetre's distance from the focus of the lens through which the solar rays were transmitted; No. 2 was placed at sixteen times that distance; No. 3 was separated from the latter by a further interval of twelve decimetres; No. 4 was at fifty-five centimetres from this; and No. 5 stood at fifty-seven decimetres from the focus. The experiment lasted from half-past one to half-past four, p.m ; and at the end of these three hours, it was found that all these little plants, except those of No. 1, had become green to very nearly the same extent; while those that had remained nearest the focus, and had, therefore, been exposed to the fullest sunlight, had remained as yellow and sickly as before.—*Scientific Opinion.*

Colouration of Glass under the Influence of Direct Sunlight.—M. Bontemps, who is the managing director of the celebrated Crystal Glass Works at Choisy le Roi, states, after referring to the observations on this subject made by the immortal Faraday, in 1824, and M.M. Gaffield and Pelouze, in 1863 and 1867, that his observations lead to the following results:—Within three months after having been exposed to sunlight, the best and whitest glass made at St. Gobain is turned very distinctly yellow; extra white glass (of a peculiar mode of manufacture) has become even more yellow, and gradually assumes a colour known as *pelure d'oignon;* glass containing 5 per cent. of litharge was also effected, but far less perceptibly; crystal glass, made with carbonate of potassa (the other varieties referred to contain carbonate of soda), litharge, and silica, was not at all affected; English plate-glass, made by the British Plate Glass Company, and exhibiting a distinctly azure-blue tinge, remained, also, unaffected. The author attributes this colouration, which begins with yellow and gradually turns to violet, passing through red *pelure d'oignon*, to the oxidising effects of the sun's rays upon the protoxides of iron and manganese contained in glass.—*Chemical News.*

To Correspondents.

Ignoramus.—The term "matt," is employed to imply a smooth surface without glaze or polish. It is a technical term, and will not be found commonly in dictionaries. It is chiefly used in the gilding trade to distinguish matt gold or dead gold from burnished gold. We doubt whether the space devoted to a glossary of such terms would be generally useful, as most photographers are familiar with the technicalities of their art, or quickly become so. But we will consider the matter.

W. L. B.—The proportions and general plan of your proposed studio are excellent. 2.—No other light will be needed; but we should be disposed to have the small portion of north roof adjoining the ridge, and marked as opaque in the plan, made of ground or stippled glass; this would admit a subdued light, and would assist in softening shadows, and would prevent the entrance of direct sun light. 3. Sheet glass will answer well. 4. The 21-ounce glass is a suitable thickness. 5. We cannot speak with any certainty of the amount of hot water piping necessary to keep the room at a proper temperature. Mr. Fry can probably give you some information.

F. W. S. (Commander R. N.)—The Carrier paper keeps admirably; but the prints lack force, and the toning is not easy except in a special bath. Durand's paper, and Henderson's paper, give excellent results in every way. The prints are vigourous, and they tone easily. Both papers keep well for some time, about two months, probably for much longer, but we have not tried it. 2. Meagher's printing frames, with India-rubber bearings, are very excellent, and answer well. 3. The camera for enlarging negatives, as a rule, will answer well for copying and enlarging direct, or may be easily arranged to answer. To secure the best effect in copying albuminised prints, it is a good plan to wet the surface and bring it into optical contact with a plate of glass. This will render the inequalities of surface less manifest. 4. The work was "Gems of Italian Art," published by Sampson Low and Co. We are uncertain of the price, but think it was 7s. 6d. You have had the aid of a good teacher, and the companionship of a most accomplished photographer. 5. Of "tunicare" we have had some very good reports; but have not had time to make an efficient trial ourselves. Winter months are not the best for experiments of this kind, and our other duties keep us very closely engaged at the desk at this season. We fear that you are right as to the jealousy of many artists in relation to photography, and their fear of its results when in the hands of men of artistic power. We hope to see art and photography, however, more and more united.

Lime Light.—You may colour, or get coloured, the transparencies you have purchased, without risk of infringing any law.

N.—Le Gray's well-known and fine cloud pictures were produced on wet collodion plates. We are uncertain of the exact date of their issue; but it was about 1854.

P. Lothian.—The correction shall have due attention.

W. E. J.—We fear that with a glass room only eight feet square, you will have great difficulty in getting any really good effects in lighting; at least three or four feet of the side and top light should be shut out at the background end; and you will frequently find it desirable to cover with blinds a portion of the skylight all along the ridge. Try this plan, and stop out entirely your front light. We cannot recommend you to rely on any method of stopping out, or masking your negatives with colour. Re-touching the negative may often be useful; but should not be relied upon as a substitute for proper light and shade in the negative. Read Mr. Croughton's recent articles on re-touching negatives—you will find them in recent numbers of the News. The aspect of your light is good.

F. Wrigby.—There are probably two or three causes for the defect of which you speak in your collodion prints. The dull, sunken look and imperfection in the whites is probably partly due to over development, which buries the shadows, and slightly fogs the lights, and partly to the want of varnish. In most cases when exposure, development, &c., are right, the blacks look dull and sunken, until the film is varnished. The slightest trace of fog will of course spoil the lights. Full exposure, and moderately rapid development, with a developer containing a full proportion of acid will generally secure the proper result if the chemicals are in good condition. 2. The lens you mention is probably the best you can have for the purpose. We have before heard of good results being obtained by means of coffee and gallic acid, but we have not ourselves tried the process.

T. W. P.—We believe that Dr. Van Monckhovens' apparatus can be seen at Mr. Dallmeyer's, who will, we believe, be the agent for this country. Mr. Mayall, of Brighton, purchased the set which was exhibited at the meeting of the Society.

John Williams.—You have used a somewhat complicated method of intensification, employing iodine after permanganate. Your best plan will be to wash off the iodized varnish with strong alcohol, and then varnish with clear varnish, or, if necessary, before varnishing again, reduce the intensity by means of a very dilute solution of cyanide in a mixture of equal parts of spirits of wine and water.

Received.—*Photographic Fac-Similes*, by W. Greggs, No. 1.

Several Correspondents in our next.

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